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VOL. 1

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CURRENT SERIAL RECORDS

U.S. Department of Agriculture

1964 BUDGET

EXPLANATORY NOTES

AGRICULTURAL RESEARCH SERVICE

COOPERATIVE STATE

EXPERIMENT STATION SERVICE

EXTENSION SERVICE

FARMER COOPERATIVE SERVICE

SOIL CONSERVATION SERVICE

PREFACE

Project Statements -

The obligations shown in the Project Statements are based on the appropriations and activities proposed in the 1964 Budget Estimates. In some Project Statements the activities are further divided into subcategories, reflecting a more detailed description of the work conducted under the appropriation items.

It should be noted that amounts shown for these subcategories in the Project Statements are not always obtainable directly from accounting records formalized by specific account classifications. Wherever it has been necessary to distribute costs to activities for which total amounts are not directly available from the accounts, every effort has been made to base such charges as accurately as possible on available objective information such as periodic time reports, workload measurement systems, etc.

Employees' Compensation Costs -

The budget estimates for 1964 continue to include funds for mandatory reimbursement to the Employees' Compensation Fund for compensation benefit payments made from that fund on account of employees of the Department who were injured while in the performance of duty subsequent to December 1, 1960. Public Law 86-767 enacted September 13, 1960, provides, in part, as follows:

"Each agency shall include in its annual budget estimates for the next fiscal year a request for an appropriation in an amount equal to such costs. Sums appropriated pursuant to such request shall within thirty days after they become available, be deposited in the Treasury to the credit of the Employees' Compensation Fund."

Each year the Secretary of Labor furnishes this Department with a report identifying by agency the direct cost of benefits and payments made on behalf of USDA employees in the preceding fiscal year. (The first such report covered only the seven months from December 1, 1960 through June 30, 1961 and the record report covers all of fiscal year 1962). Agencies are informed of the amount of such payments made by the Fund and are instructed to provide for these costs within their annual budget estimates.

The following tabulation identifies by agency the amounts included in the 1964 budget estimates for reimbursement to the Employees' Compensation Fund compared with amounts paid in fiscal year 1963:

	F.Y. 1963 (1961 Payments)	F.Y. 1964 (1962 Payments)	Increase
Agricultural Research Service	\$18,021	\$105,744	+\$87,723
Cooperative State Experiment Station Service	- -	136	+136
Extension Service	937	15,490	+14,553
Forest Service	28,728	519,655	+490,927
Soil Conservation Service	8,883	36,609	+27,726
Economic Research Service	- -	235	+235
Statistical Reporting Service	- -	2,444	+2,444
Agricultural Marketing Service	2,306	21,974	+19,668

	F.Y. 1963 (1961 Payments)	F.Y. 1964 (1962 Payments)	Increase
Commodity Exchange Authority	- -	320	+320
Agricultural Stabilization and Conservation Service	17,378	119,824	+102,446
Commodity Credit Corporation	38	101	+63
Foreign Agricultural Service	- -	70	+70
Federal Crop Insurance Corporation	6	1,062	+1,056
Rural Electrification Administration ...	- -	289	+289
Farmers Home Administration	1,759	25,421	+23,662
Office of the General Counsel	- -	133	+133
Office of Information	- -	6	+6
National Agricultural Library	80	1,586	+1,506
Office of the Secretary	55	99	+44
Total	<u>78,191</u>	<u>851,198</u>	<u>+773,007</u>
Deduct Forest Service	<u>-28,728</u>	<u>-519,655</u>	<u>-490,927</u>
Total (excluding Forest Service)	<u>49,463</u>	<u>331,543</u>	<u>+282,080</u>

The increase over 1963 results primarily from the fact that the amount included in the 1964 Budget covers (1) benefit payments made during the full fiscal year 1962 as compared with the seven month period provided for in the 1963 Budget, and (2) continuing benefit payments made during fiscal year 1962 for injuries sustained in the previous year.

Reductions in estimates due to centralized data processing of personnel and payroll data (MODE) --

The budget estimates for 1964 reflect reductions, totalling \$1,354,200 representing estimated savings due to the installation of a centralized data processing operation (MODE) for personnel and payroll data.

During fiscal year 1963, the Department began to centralize most of the operations for the preparation of payrolls and the processing of personnel data under an automatic data processing system referred to as "MODE -- Management of Objectives with Dollars through Employees". The system, centralized in one office and using a Department-owned computer, will provide, during fiscal year 1964 and subsequent years, a comprehensive system of payrolling, personnel record keeping and reporting and related information for financial management. It is anticipated that these phases of the system will be installed by the start of fiscal year 1964.

Savings during fiscal year 1964 are expected to result from decreased administrative costs in several appropriations and funds. In those cases where savings have been made in appropriated funds, reductions have been made in the 1964 estimates and are separately identified in these justifications.

The following tabulation identifies savings by Agency reflected in the 1964 budget (Amounts shown are reductions in appropriated funds unless otherwise identified.):

Agricultural Research Service	\$369,000
Extension Service	9,500
Farmer Cooperative Service	3,000

Soil Conservation Service	372,000
Economic Research Service	8,000
Statistical Reporting Service	8,000
Agricultural Marketing Service	a/ 205,000
Foreign Agricultural Service	20,000
Commodity Exchange Authority	5,000
Agricultural Stabilization and Conservation Service	211,000
Federal Crop Insurance Corporation	24,000
Rural Electrification Administration	12,000
Farmers Home Administration	97,000
Office of the General Counsel	4,000
Office of Information	6,000
National Agricultural Library	700
Total	<u>1,354,200</u>

a/ Includes \$81,300 of reductions in obligations under permanent appropriations, trust and other funds.

Pay rate increase costs -

Public Law 793, approved October 11, 1962 by the 87th Congress, provided adjustments in salaries based on an initial increase effective October 15, 1962 and a further increase effective January 5, 1964. The estimates for 1963, therefore, reflect the costs of the initial increase for the 37 weeks it was effective in that year and the 1964 budget estimates reflect the full-year cost of this initial increase as well as the approximately 6 months in which the additional increase is effective in 1964.

In order to find means for meeting these increased costs, a thorough analysis of personnel and other requirements was undertaken in each agency of the Department. During the fiscal year 1963, it was possible to meet a substantial portion of the increased costs from available funds. This was due, primarily, to the availability of unobligated balances under the appropriation for the 1963 Special Milk Program and the appropriation made in 1963 to reimburse the Commodity Credit Corporation for the 1962 costs of the Special Milk Program.

In the fiscal year 1964 absorptions have been made, where possible, which would not hamper the carrying out of essential programs. Further absorptions could not be made without reducing program activities below the levels proposed.

Total costs under all funds available to the Department are estimated at \$28,179,057 in 1963 and \$52,595,690 in 1964. A discussion of the costs in each year follows.

Fiscal year 1963. During fiscal year 1963, supplemental estimates or transfers are anticipated to meet pay costs in that year. Such amounts have been reflected as a part of the "Base for 1964" entries in individual justifications.

The following tabulation summarizes total costs in the fiscal year 1963 under all funds available to the Department, including transfer from other Departments and Trust funds, as well as anticipated supplemental appropriations to meet these costs.

	<u>Total</u>	<u>Forest Service</u>	<u>Other USDA Agencies</u>
Total estimated costs under all funds available to the Department, F.Y. 1963	\$28,056,019	\$5,415,000	\$22,641,019
Amount to be absorbed from presently available funds	<u>7,127,185</u>	<u>1,615,000</u>	<u>5,512,185</u>
Balance to be financed as follows:			
Supplemental appropriations	10,056,000	3,800,000	6,256,000
Transfers and increases in limitations	<u>10,872,834</u>	- -	<u>10,872,834</u>
Total	<u>20,928,834</u>	<u>3,800,000</u>	<u>17,128,834</u>

Fiscal year 1964. Supplemental appropriations and transfers anticipated for fiscal year 1963 would provide for pay rate increases for 37 weeks in that year. In 1964, additional funds will be needed to provide for the full year costs of the initial increase made effective in 1963 as well as to provide additional funds for the further increase effective January 5, 1964. Such amounts are specifically identified in the budget requests for the appropriations of the Department.

In all cases, pay costs related to increases requested for fiscal year 1964 are included as a part of such increases and are not included in the cost figures shown below.

An analysis of the increased pay requirements on the base for 1964 is shown in the following tabulation (including information relating to all funds available to the Department):

	<u>Total</u>	<u>Forest Service</u>	<u>Other USDA Agencies</u>
Full year cost of initial increase	\$38,406,312	\$7,478,000	\$30,928,312
Part-year cost of additional increase effective January 5, 1964	<u>14,189,378</u>	<u>3,075,000</u>	<u>11,114,378</u>
Total estimated costs on base for 1964	52,595,690	10,553,000	42,042,690
Deduct costs to be financed in 1963 by transfers and appropriations	<u>-20,928,834</u>	<u>-3,800,000</u>	<u>-17,128,834</u>
Increased costs 1964 compared with 1963	31,666,856	6,753,000	24,913,856
Amount to be provided by absorptions, reimbursements, fees, etc.	<u>-9,450,995</u>	<u>-1,365,000</u>	<u>-8,085,995</u>
Additional appropriations requested, 1964:			
To place on a full year basis the initial increase in 1963	10,459,783	2,761,000	7,698,783
To finance 1964 costs of the additional increase	<u>11,756,078</u>	<u>2,627,000</u>	<u>9,129,078</u>
Total additional appropriations	<u>22,215,861</u>	<u>5,388,000</u>	<u>16,827,861</u>

The amounts shown above reflect costs of the second step of the increase, for only a part of 1964. It will therefore be necessary, in the 1965 Budget, to request additional funds to place this increase on a full year basis.

Postal rate increases -

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In addition to increasing salary rates, Public Law 87-793 raised rates on postage. The Department is required to reimburse the Post Office Department to cover the cost of mailings. In most cases, this cost has been absorbed. In several agencies and appropriations, however, where the volume of mailings is a significant part of the total appropriation or where, due to the full utilization of available funds, it was not possible to effect further absorptions without seriously impairing programs, an additional amount has been requested for fiscal year 1964. In those agencies, the total postal costs are shown in the project statements as a non-add item in parentheses immediately below the entry for total pay act costs. The agencies and amounts concerned are identified in the following tabulation:

<u>Agency</u>	<u>Amount</u>
Cooperative State Experiment Station Service ...	\$60,000
Extension Service	a/ 633,500
Soil Conservation Service	58,000
Economic Research Service	17,000
Statistical Reporting Service	75,000
Agricultural Marketing Service	163,900
Agricultural Stabilization and Conservation Service	b/ 365,420
Office of Information	18,000
Total	<u>1,390,820</u>

a/ Represents an increase of \$317,500 over an anticipated supplemental estimate of \$316,000 in F.Y. 1963.

b/ In addition \$199,830 applicable to Commodity Credit Corporation funds.

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AGRICULTURAL RESEARCH SERVICE

Purpose Statement

The Agricultural Research Service was established by the Secretary of Agriculture on November 2, 1953, under the authority of the Reorganization Act of 1949 (5 U.S.C. 1332-15), Reorganization Plan No. 2 of 1953, and other authorities. It conducts farm, utilization, and nutrition and consumer use research, plant and animal disease and pest control and eradication activities, and operates the meat inspection service. The Administrator of this Service is also responsible for the coordination of all research of the Department.

The program of the Agricultural Research Service is organized under two major areas of activity as follows:

1. Research is conducted under three major categories: (a) farm research (research on crops and livestock and their diseases and pests, soil and water conservation, and agricultural engineering); (b) utilization research and development; and (c) nutrition and consumer use research.
2. Regulatory activities are conducted under four major categories: (a) plant disease and pest control; (b) animal disease and pest control; (c) pesticides regulation; and (d) meat inspection.

The Service carries out emergency programs, when necessary, for the control and eradication of animal diseases, such as foot-and-mouth disease, and for the control of emergency outbreaks of insects and diseases.

The Service directs research beneficial to the United States which can be advantageously conducted in foreign countries through agreements with foreign research institutions and universities. This program is carried out under the authority of sections 104(a) and (k) of Public Law 480, the Agricultural Trade Development and Assistance Act of 1945, as amended.

The Service maintains a central office in Washington, D. C., and operates the 10,378 acre Agricultural Research Center at Beltsville, Maryland. However, most of the Service's work is conducted at approximately 850 other locations in the United States, Puerto Rico and the Virgin Islands and at several locations in foreign countries. Much of the work is conducted in cooperation with the State agricultural experiment stations, State Departments of Agriculture, and with other agencies, both public and private. On November 30, 1962 there were 17,197 full-time employees, of which 3,122 were in the Washington metropolitan area and 14,075 were located at other points in the United States and Possessions, and foreign countries.

	Estimated Available, 1963	Budget Estimates, 1964
Appropriations:		
Salaries and expenses:		
Research	\$88,293,000	\$90,554,000
Plant and animal disease and pest control	a/ 62,331,500	65,148,000
Meat inspection	<u>25,955,000</u>	<u>28,502,000</u>
Total, Salaries and expenses b/	<u>176,579,500</u>	<u>184,204,000</u>
Salaries and expenses (Special foreign currency program) c/	<u>5,265,000</u>	<u>2,500,000</u>
Construction of facilities d/	<u>- -</u>	<u>- -</u>
Total	<u>181,844,500</u>	<u>186,704,000</u>

a/ Includes \$2,750,000 appropriated in the Second Supplemental Appropriation Act, 1962, but made available in 1963.

b/ Excludes reappropriation of \$1 million of prior year unobligated balances available for labor at research field stations.

c/ In addition, unobligated balances or prior year funds are estimated to be available for obligation as follows: 1963, \$23,302,902; 1964, \$13,501,024.

d/ Unobligated balances of prior year funds are estimated to be available for obligation as follows: 1963, \$4,650,554; 1964, \$200,000.

Summary of Appropriations, 1963, and Estimates, 1964

Appropriation Item	: Estimated : Available, : 1963	: Budget : Estimates, : 1964	: Increase (+) : or : Decrease (-)
Salaries and expenses:	:	:	:
Research	: \$88,293,000:	: \$90,554,000:	: +\$2,261,000
Plant and animal disease	:	:	:
and pest control	: <u>a/</u> 62,331,500:	: 65,148,000:	: +2,816,500
Meat inspection	: 25,955,000:	: 28,502,000:	: +2,547,000
Total, Salaries and	:	:	:
expenses	: <u>b/</u> 176,579,500:	: <u>b/</u> 184,204,000:	: +7,624,500
Salaries and expenses	:	:	:
(Special foreign currency	:	:	:
program)	: <u>c/</u> 5,265,000:	: <u>c/</u> 2,500,000:	: -2,765,000
Total <u>d/</u>	: 181,844,500:	: 186,704,000:	: +4,859,500

a/ Includes \$2,750,000 provided in the Second Supplemental Appropriation Act, 1962, for use in fiscal year 1963.

b/ Excludes reappropriation of \$1 million of unobligated balances of prior year for additional work at research field stations.

c/ In addition, unobligated balances of prior year funds are estimated to be available for obligation as follows: 1963, \$23,302,902; 1964, \$13,501,024.

d/ In addition unobligated balances of prior year funds from the appropriation "Construction of facilities" are estimated to be available for obligation as follows: 1963, \$4,650,554; 1964, \$200,000.

(a) Salaries and Expenses

	<u>Research</u>	<u>Plant and Animal Disease and Pest Control</u>	<u>Meat Inspection</u>	<u>Total</u>
Appropriation Act, 1963	\$86,123,000	\$58,055,500	\$25,000,000	\$169,178,500a/
Transferred to "Operating Expenses, Public Build- ings Service, General Services Administration" for space rental	-39,000	-4,000	-2,000	-45,000
Second Supplemental Appropriation Act, 1962, available for use only in 1963	- -	2,750,000	- -	2,750,000
Proposed supplemental and transfers 1963, for increased pay costs	2,209,000	1,530,000	957,000	4,696,000
Base for 1964	88,293,000	62,331,500	25,955,000	176,579,500a/
Budget Estimate, 1964 ...	90,554,000	65,148,000	28,502,000	184,204,000a/
Increase	<u>+2,261,000</u>	<u>+2,816,500</u>	<u>+2,547,000</u>	<u>+7,624,500</u>

a/ Excludes reappropriation of \$1,000,000 of prior year funds for labor at research field stations.

SUMMARY OF INCREASES AND DECREASES, 1964
(On the basis of available funds)

Research:

A net increase of \$2,261,000 for:

Staffing and operating farm research laboratories recently authorized by Congress	+1,445,000
Animal parasite research (\$305,000) and development of better methods of protection against introduction into the United States of foot-and-mouth disease and African swine fever (\$205,000)	+510,000
Research on insect taxonomy basic to entomology research	+103,000
Soil and water conservation research to meet urgent needs in watershed engineering and management	+308,000
Nationwide food consumption survey	+755,000
Pay act costs pursuant to Public Law 87-793	+2,068,000
Decrease due to elimination of nonrecurring amounts provided in 1963 for construction of laboratories and improvements	-2,780,000
Reduction to reflect estimated savings due to the installation of a centralized data processing operation (MODE) for personnel and payroll data	-148,000
Net increase, Research	<u>+2,261,000</u>

Plant and Animal Disease and Pest Control:

A net increase of \$2,816,500 for:

Reduction in plant pest control activities relating to eradication of the fire ant (\$177,000) and gypsy moth (\$750,000)	-927,000
Strengthening plant quarantine inspection at ports-of-entry to increase protection against introduction of foreign pests and diseases	+484,000
Space rental for plant and animal quarantine services at international airports pursuant to Public Law 87-255	+250,000
Decrease in funds for eradicating screwworm in the Southwest:	
Second Supplemental Appropriation Act, 1962, available for use only in 1963	-2,750,000
Increase in Budget Estimates, 1964, to continue financing of program	+2,000,000
Eradicating hog cholera	-750,000
Reduction due to elimination of non-recurring amount provided in 1963 for construction of import livestock inspection facilities along Canadian border	+2,056,000
Strengthening animal inspection and quarantine to prevent the introduction and dissemination of foreign animal diseases	-150,000
Increased activities under the Virus-Serum-Toxin Act to assure the safety and potency of veterinary biologics	+173,000
Additional registration and enforcement activities related to "economic poisons" regulated under the Federal Insecticide, Fungicide and Rodenticide Act, as amended, and related laws	+167,000
Reduction to reflect estimated savings due to the installation of a centralized data processing operation (MODE) for personnel and payroll data	+148,000
Pay act costs pursuant to Public Law 87-793	-92,000
Net increase, Plant and Animal Disease and Pest Control	+1,457,500
	<u>+2,816,500</u>

Meat Inspection:

A net increase of \$2,547,000 for:

Providing additional meat inspection staff to meet increasing mandatory meat inspection workload	+1,575,000
Reduction to reflect estimated savings due to the installation of a centralized data processing operation (MODE) for personnel and payroll data	-129,000
Pay act costs pursuant to Public Law 87-793	+1,101,000
Net increase, Meat Inspection	<u>+2,547,000</u>

PROJECT STATEMENT
(On the basis of available funds)

Project	1962	1963 (estimated)	Increases and Decreases:		1964 (estimated)
			Increased	Other	
			Pay Costs		
			(P.L.87-793)		
<u>Research:</u>					
a. <u>Farm research:</u>					
(1) Animal husbandry ..	\$6,231,740:	\$6,174,100:	+\$111,300:	+\$107,600:	\$6,393,000
(2) Animal disease and parasite	10,431,932:	10,953,600:	+156,200:	+690,900:	11,800,700
(3) Crops	17,063,909:	18,111,700:	+494,300:	+175,000:	18,781,000
(4) Entomology	8,927,789:	9,203,700:	+243,700:	+371,600:	9,819,000
(5) Soil and water conservation	10,116,538:	10,517,500:	+264,600:	+622,600:	11,404,700
(6) Agricultural engineering	3,232,162:	3,373,900:	+84,100:	+289,600:	3,747,600
Total, farm research	56,004,070:	58,334,500:	+1,354,200:	+2,257,300:	61,946,000
b. <u>Utilization research and development:</u>					
(1) Cereal and forage crops	4,109,161:	5,376,100:	+140,200:	-7,400:	5,508,900
(2) Cotton, wool and other fibers	3,882,858:	5,070,100:	+123,900:	-7,500:	5,186,500
(3) Fruits and vegetables	2,932,588:	3,650,600:	+93,200:	-5,000:	3,738,800
(4) Oilseeds	2,147,697:	2,890,800:	+73,000:	-4,200:	2,959,600
(5) New and special plants	1,719,464:	2,000,100:	+55,800:	-2,700:	2,053,200
(6) Poultry, dairy, and animal products	3,995,386:	5,418,000:	+147,200:	-7,200:	5,558,000
Total, utilization research and de- velopment	18,787,154:	24,405,700:	+633,300:	-34,000:	25,005,000
c. <u>Nutrition and consumer use research:</u>					
(1) Human nutrition ..	1,470,742:	1,474,300:	+38,400:	-2,700:	1,510,000
(2) Consumer and food economics	678,733:	780,100:	+25,600:	+753,300:	1,559,000
(3) Clothing and housing	488,868:	518,400:	+16,500:	-900:	534,000
Total, nutrition and consumer use re- search	2,638,343:	2,772,800:	+80,500:	+749,700:	3,603,000
d. <u>Construction of research facilities ..</u>	- -	a/2,780,000:	- -	-2,780,000:	- -
e. <u>Contingency research fund</u>	- -	1,000,000:	- -	- -	1,000,000
Subtotal	77,429,567:	89,293,000:	+2,068,000:	+193,000:	91,554,000
Deduct reappropriation for Special Fund	-1,000,000:	-1,000,000:	- -	- -	-1,000,000
Total, Research	76,429,567:	88,293,000:	+2,068,000:	+193,000(1):	90,554,000

(Continued on next page)

Project	1962	1963 (estimated)	Increases and Decreases		1964 (estimated)
			Increased	Other	
			Pay Costs (P.L.87-793):		
2. Plant and Animal Disease and Pest Control:					
a. Plant disease and pest control:					
(1) Plant pest control:	15,975,100:	b/18,304,700:	+289,300:	-958,000:	17,636,000
(2) Plant quarantine	6,736,693:	7,486,400:	+319,500:	+703,100:	8,509,000
Total, plant disease and pest control ..	22,711,793:	25,791,100:	+608,800:	-254,900:	26,145,000
b. Animal disease and pest control:					
(1) Animal disease control and eradica- tion	28,067,362:	32,463,300:	+718,500:	+1,262,200:	34,444,000
(2) Animal inspection and quarantine	2,324,395:	2,560,600:	+78,600:	+355,800:	2,995,000
(3) Canadian border inspection facilities:	- - :	150,000:	- - :	-150,000:	- -
Total, Animal disease and pest control .	30,391,757:	35,173,900:	+797,100:	+1,468,000:	37,439,000
c. Pesticides regula- tion	1,107,905:	1,366,500:	+51,600:	+145,900:	1,564,000
Total, Plant and Animal Disease and Pest Control	54,211,455:	b/62,331,500:	+1,457,500:	+1,359,000(2)	65,148,000
3. Meat Inspection	24,062,010:	b/25,955,000:	+1,101,000:	+1,446,000(3)	28,502,000
Total increased pay costs (P.L. 87-793) .	- - :	(4,698,600):	(4,629,500):	(247,000):	(9,575,100)
Subtotal c/	154,703,032:	d/176,579,500:	+4,626,500:	+2,998,000:	184,204,000
Unobligated balance lapsing	1,775,627:	- - :	- - :	- - :	- -
Total available (ex- cluding reappropri- ations) or estimate ..	156,478,659:	176,579,500:	+4,626,500(4)	+2,998,000:	e/184,204,000
Unobligated balance brought forward	- - :	-2,750,000:			
Unobligated balance carried forward	+2,750,000:	- - :			
Transferred in 1963 estimates:					
From "Salaries and expenses, Farmers Home Administration"	-75,000:	- - :			
To "Payments and expenses, Cooperative State Experiment Station Service" ...	+404,000:	- - :			

(Continued on next page)

Project	1962	1963 (estimated)	Increases and Decreases			1964 (estimated)
			Increased			
			Pay Costs	Other		
			(P.L.87-793)			
Transferred to "Operating:						
expenses, Public Build-						
ings Service, General						
Services Administration"	+71,841	+45,000				
Proposed supplemental						
for increased pay costs	- -	-1,471,000				
Transferred from "Special:						
milk program, Agricul-						
tural Marketing Service,"						
due to pay increases ..	- -	-3,225,000				
Total appropriation or						
estimate	:159,629,500	:169,178,500				

- a/ Represents total amount available. It is estimated that \$900,000 will be obligated in 1963 and \$1,880,000 in 1964.
- b/ Does not reflect non-recurring transfer of \$324,000 from gypsy moth control to meat inspection under authority of Section 702(b) of the Department of Agriculture Organic Act of 1944.
- c/ Represents amounts available. Applied costs are \$155,543,502 for 1962, \$175,871,200 for 1963, and \$186,784,000 for 1964. The differences are due primarily to variations in construction contracts awarded compared with work completed.
- d/ Includes \$3,300 estimated to be transferred to "Salaries and expenses, General Administration" during fiscal year 1963 for the Office of the Inspector General.
- e/ Includes \$105,744 for mandatory reimbursement to the Employees Compensation Fund for payments made from that fund in fiscal year 1962.

INCREASES AND DECREASES

Research

(1) A net increase of \$193,000 for Research consisting of:

(a) An increase of \$1,445,000 for staffing research facilities recently authorized by Congress:

In recent years Congress has authorized the construction of new facilities and expansion of others to provide for urgently needed research in a number of fields. It is important that these facilities be staffed as rapidly as possible in order to take advantage of their research potential. It is recommended that additional funds be provided in fiscal year 1964 as follows:

Insect Research Laboratories:

Boll weevil laboratory, State College, Mississippi	\$189,600
Southern grain insects laboratory, Tifton, Georgia	114,400
Northern grain insects laboratory, Brookings, South Dakota	114,400

Poultry Research Laboratories:

Poultry disease laboratory, Athens, Georgia	330,500
South Central poultry research laboratory, State College, Miss.	73,400

National Arboretum, Washington, D.C.	82,200
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Soil and water research laboratories (Senate Document 59,
86th Congress)

Tillage machinery laboratory, Auburn, Alabama	205,300
Research on conservation farming in the Southwest, Bushland, Texas	102,500
Plant-soil-nutrition laboratory, Ithaca, New York	103,600
Soil erosion research facilities, Pullman, Washington	77,800
Soil and water research laboratory, Twin Falls, Idaho	51,300
Total	<u>1,445,000</u>

There follows a justification of the increase needed for each of these laboratories.

1. Boll weevil research laboratory, State College, Mississippi, \$189,600

This laboratory, for which \$1,100,000 was appropriated, was occupied in September 1961 and is operating at about 75 percent of the level projected for it. Both basic and applied research need to be strengthened and additional lines of research initiated in order to more nearly activate the research program as outlined in the initial survey of boll weevil research needs. The boll weevil causes cotton crop losses of about \$350 million annually. In addition, it is estimated that control measures cost producers \$100 million per annum.

With the additional funds requested field studies would be conducted to thoroughly evaluate the sterile male technique, attractants and feeding stimulants, machinery designed to pick up and destroy punctured cotton squares and to capture adult weevils from the plants, and the use of disease organisms for control of the boll weevil. Basic research on the biochemistry and the physiology of the weevil would be strengthened with particular emphasis on behavioral and sensory physiology. Research would be strengthened to discover and develop less hazardous chemicals and less hazardous ways of using presently available effective insecticides.

All species, varieties and selections of cotton, as well as related varieties of plants would be surveyed in the search for weevil resistant cotton. Leads already uncovered would be studied from the standpoint of inheritance and genetic behavior. Studies would be made of the correlation of population dynamics of the boll weevil with fruiting and maturity patterns of the cotton plant.

2. Southern grain insect research laboratory, Tifton, Georgia, \$114,400.

This laboratory, for which \$550,000 was appropriated, was occupied in July 1961. It is also operating at about 75 percent of its projected level. Additional funds are needed to strengthen the research on biological, physiological and chemical methods for the control of various insects attacking corn and other grain crops in the South, and for research on insect borne diseases which are an important problem in corn and grain sorghum production in that area. Research is also needed to determine the relationship of various insects to the cause and spread of parasitic diseases, and on genetics and plant physiology in relation to grain insects. It is estimated that insect pests cause crop losses of approximately \$186 million annually to corn and small grain producers in the South.

With the additional funds requested research would be initiated or intensified on biology, ecology and control of small-grain and sorghum insects in the Southeast with special emphasis on aphids attacking oats, the sorghum midge, sorghum webworm and corn earworm. Research would include devising methods to identify and measure the resistance of sorghum and oat varieties to these insects, and investigating new approaches for control of the insect pests. Research would be conducted on the nutritional requirements and methods of mass rearing of the sorghum midge and sorghum webworm, and the physiology and biochemistry of insect growth, development and reproduction, with special attention given to obtaining information which might lead to the development of new methods for controlling grain insects.

Basic research would be conducted on the relation of insects to diseases of corn and grain sorghum, including studies of the relation of insects to ear rots, stalk rots, and root rots, also on the vector relationship of insects to viruses and bacterial diseases of corn and sorghum.

3. Northern grain insect research laboratory, Brookings, South Dakota, \$114,400.

This laboratory, for which \$550,000 was appropriated, was occupied in July 1961 and is operating at about 75 percent of its projected level. It is designed for research to reduce the tremendous losses caused by grain insects which result in crop losses to corn and small grains in the North Central States of about \$885 million annually. Both basic and applied research need to be strengthened to find ways of making more effective use of noninsecticidal methods for the control of various insects attacking corn and small grains. Additional research is also needed on the plant physiological phases to round out the team approach of agricultural scientists to solving the insect problems on small grains, corn and grain sorghum.

With the additional funds requested, investigations would be initiated on the biology, ecology and control of insects such as wireworms, white grubs, and aphids, attacking small grain in the North. Research would be strengthened on developing ways to achieve sterility in these insects by chemosterilants and on the feasibility of using sexually sterile males for insect control.

Research on evaluating corn and small grains for insect resistance and on developing resistant inbreds and hybrids of corn and varieties of small grains would also be intensified. Studies would be initiated on the physiological and biochemical nature of resistance to insects, on plant physiological responses to insect feeding, the translocation of insecticides, and on other insect related plant physiological phenomena.

4. Poultry disease research laboratory, Athens, Georgia, \$330,500.

It is anticipated that this laboratory, for which \$950,000 was appropriated, will be available for use in the spring of 1963. It is designed specifically for research on the interrelation of disease, environmental, and management factors as they pertain to poultry health under relatively well-controlled conditions. The diseases to be studied are those causing the highest condemnation losses in dressed poultry in the Southeast. The results of research would be applicable to other parts of the country since the diseases to be studied are widely distributed throughout poultry producing areas.

Specific diseases or combinations of diseases responsible for the highest percentages of condemnations would be first determined. Simultaneously with disease-environmental-management complex studies, there would be studies specifically concentrated on the many aspects of the disease processes and their causative agents.

Research would include improved diagnostic tests for respiratory diseases, particularly through the application of fluorescent microscopy and tissue culture techniques; the role of immunization procedures in broilers in chronic respiratory disease and disease transmission; methods for development of flocks free of PPLO (pleuropneumonia-like organisms); and a study of the possible effects of high-level antibiotic feeding as related to the incidence and severity of air sac infections.

The work would also include genetic studies which would make possible a scientifically based research approach to the problem by providing the required inbred lines of poultry that are susceptible, as well as lines that are resistant to PPLO and other infectious agents; physiological responses to disease and environmental stress; and management and nutritional factors which might reduce condemnations. Research would also be conducted on the effect of housing and environmental factors directly related to the incidence and control of specific poultry diseases being studied at the Athens laboratory.

5. South Central poultry research laboratory, State College, Mississippi, \$73,400.

Unavoidable delay in obtaining a site for this laboratory, for which \$400,000 was appropriated, and in obtaining a satisfactory bid have resulted in delay in construction, but it is anticipated that a construction contract will be awarded soon and that the facilities will be available for use in the spring of fiscal year 1964. It is important that initial staffing be provided for at an early date in order to implement the projected program.

Losses from condemnations and reduced production efficiency cost the poultry industry approximately \$100 million annually. Basic knowledge is needed on physical requirements and effects of various environmental factors which influence the performance of all classes of poultry. Such knowledge is required to meet the demands for improved design of housing, equipment and practical management methods for use by producers.

With the funds recommended, research would be initiated on relationship of poultry husbandry and management practices and housing and equipment design and use to poultry condemnations. Field trials already in progress are providing leads for more critical experimentation under controlled laboratory conditions. They would be continued, and promising results developed from laboratory experiments would be applied and evaluated under field conditions. Appropriate phases of these studies will be closely coordinated with the work at the Athens laboratory.

6. National Arboretum, Washington, D. C., \$82,200.

It is anticipated that the new headquarters-laboratory building at the National Arboretum, for which \$1,500,000 was appropriated, will be available for use in the spring of 1963. It is important that the program projected for these facilities be implemented as rapidly as possible.

The increased funds would be used to initiate new research in ornamental and shade tree breeding, hardiness testing of parental stocks and progenies, and to strengthen current research on plant identification.

Needs of accelerated highway construction and an expanded urban population have resulted in demands upon the nursery industry for greatly increased production of high quality ornamentals. There are constant requests from the producer, homeowner, and the numerous agencies utilizing woody plants for highway, park and other purposes for increased ornamental and shade tree research. The Arboretum has a place of dual service to both industry and the horticulturally-minded millions of our suburban and

urban populations in investigating critical aspects of the production, cultivation, evaluation, and identification of woody plants while also serving as an outdoor museum where the public can learn from living plants grown in natural surroundings.

7. Tillage machinery laboratory, Auburn, Alabama, \$205,300.

The addition to this laboratory, for which \$400,000 was appropriated, was available for occupancy in November 1962. In order to permit utilization of it during fiscal year 1963, a non-recurring allocation of \$50,000 has been made from the research contingency fund. Beginning with fiscal year 1964, effective use of this important research laboratory will require full staffing.

Tillage methods and practices are important to conservation programs for crop land throughout the nation. The present research program on such methods and practices is very limited. The new facilities permit considerable expansion of this much-needed research.

Tillage of the soil is the greatest consumer of power in the production of crops in the United States. Some tillage is considered necessary for the growing of almost all crops. There is evidence that in some cases detrimental tillage is performed. Despite the need and cost of tillage, tools have remained essentially unchanged since their invention, or since their most radical improvement nearly 100 years ago. Very few innovations have survived the test of improved crop response or reduced cost of operation.

The basic research proposed under the increase would give more precise information on the inter-relationship of tillage, soil physical conditions, and plant growth; on the effect of soil mechanics on the tillage operation; and on tillage methods and systems of equipment which are compatible with conservation farming practices.

8. Soil and water research laboratory, Bushland, Texas, \$102,500.

Facilities and funds have been inadequate for the research needed on the many serious soil and water problems of Zita-Pullman and associated soils of the Southern High Plains area which cover large parts of New Mexico, Texas, and Oklahoma. The new building at Bushland, for which \$250,000 was appropriated in fiscal year 1961, was recently occupied. However, inadequate operating funds have limited utilization of the facility and inauguration of needed research. The funds recommended for 1964 would provide for development of about 65 percent of the expanded studies at this location contemplated under Senate Document 59. The work would be concerned with the most critical research needs: moisture conservation, irrigation water management, ground water recharge, soil compaction and structure, and grass establishment.

9. Plant-soil-nutrition laboratory, Ithaca, New York, \$103,600.

The addition to this laboratory, for which \$500,000 was appropriated, was occupied early in fiscal year 1963. It is essential now that a vigorous program, national in scope, be directed toward determining the way in which soil controls the nutritive value of forage.

Basic research has been underway for a number of years at Ithaca on the effect of chemical characteristics of soils on the chemical composition of plants grown thereon, and in turn, on the mineral nutrition and health of animals feeding on such herbage. Rising costs and limited space for precise studies have greatly reduced the capacity of the laboratory to accomplish its original objective as a focal point of information on problems in this field which are common to many States.

An increase of \$48,800 was provided by Congress for 1963 for research in the new facilities. The increase requested for fiscal year 1964 would provide for financing the new facilities at about 62 percent of the level recommended in Senate Document 59.

10. Soil erosion research facilities, Pullman, Washington, \$77,800.

The research facilities now under construction, for which \$150,000 was appropriated, will be available for use late in fiscal year 1963. Funds recommended would be for staffing and instrumentation and inauguration of laboratory and field plot studies on the mechanisms affecting erosion under the specific soil, topographic, climatic and management practices of the area to develop sound principles on which field management systems may later be developed, installed and field tested. Early development of basic information on these mechanisms of erosion on the strongly sloping loess derived soils of the broad Palouse area of the Northwest is essential for immediate development of effective conservation practices for that area.

11. Soil and water research laboratory, Twin Falls, Idaho, \$51,300.

It is expected that construction of this facility, for which \$850,000 was appropriated, will be completed and the laboratory available for research occupancy in the first half of fiscal year 1964. Research at this location will involve developing needed technology for soil conservation and irrigation water management practices on the Portneuf-Sagemoor and associated soils of the Snake River Plains which extend from Wyoming into central Oregon. The increase recommended would provide for skeleton staffing and partial instrumentation of the new facilities. It would be in addition to the \$11,300 provided in 1963 for this new laboratory and about \$55,000 to be made available by transfer of research from Boise.

(b) An increase of \$510,000 for animal parasite research and development of better methods of protection against the introduction of foot-and-mouth disease and African swine fever.

Animal parasite research (\$305,000)

Need for Increase: Some 300 species of organisms are economically significant parasites of food animals. There is urgent need for increased research to find new and improved ways to combat these parasites which cause annual losses estimated at \$1 billion.

In general, problems of parasitism are intensified as agricultural production increases and land-use is intensified. Changing agricultural practices, such as grassland conversion, irrigation, reclamation of barren

lands, concentrated production, free movement of stock, and geographical relocations within the industry are causing ever-increasing alarm about parasite loss and a mounting urgency about combative measures. Other factors are contributory, such as better diagnosis and fuller cognizance of the economic impact of parasitic disease, more farm animals and higher inventory value per unit, and keener competition in production and marketing.

Present methods of parasite control involve the use of chemicals as the most powerful aids available. Available chemicals, as useful as they are, are not satisfactory; even the best are quite short of the ideal. Despite great progress in the last 45 years, chemical measures are still lacking for controlling about two-thirds of the injurious helminths of food animals. The situation with protozoan infections is only slightly better. The kinds of parasitisms against which chemical agents can be used with even modest efficiency are, therefore, a minority of the important ones. As is the case with insects, parasites are also unusually nimble at circumventing chemical attack.

Attempts at biological control with vaccines, special management, and sanitation have been only superficially explored. However, results to date are most promising. The biological approach to the prevention and control of parasitic diseases offers many advantages, some of which are: the elimination of chemical residue hazards; the avoidance of establishing drug-fast strains; and the possibility of long-term control.

Only in the case of cattle lungworm infestation and poultry coccidiosis has there been any attempt to "vaccinate" against parasitic diseases of livestock on a significant scale. While these measures are not yet standardized or even of proved reliability, the outlook appears favorable. Kidney worms of swine, which cause enormous economic loss, are almost within reach of eradictory attack by special management practices. Other approaches (introduction of predatory fungi for control of preparasitic larvae; investigations of the diseases of parasites; selection of resistant host strains; and genetic selection of avirulent parasite strains) have received even less attention. The immunologic approach seems best suited for initial investigations because it is applicable to all parasites, it is supported by a considerable body of literature, and it offers the best chance of immediate practical development.

Plan of Work: With the increased funds proposed for 1964, primary emphasis would be given to development of **means** of biological control of parasites in the widest sense, and secondary emphasis to chemical controls. There is urgent need and ready use for safe, effective antiparasitic chemicals and scientific employment of them, and for the combined biological-chemical approach of today through use of chemosterilants, anti-enzymes, and anti-metabolites.

Research proposed would be conducted at Beltsville, Maryland. It would include:

Development of specific immunity response in selective types of tissue to cultured stages of parasites, and development of selective affinity of specific tissues to stages of parasites in tissue or organ culture.

Development of new interpretations and concepts of variations in parasitic disease processes with demonstration of biochemical and physiopathological changes by special histochemical and other techniques now available.

Determination of the relationship, through exploration of new tissue culture techniques and other means, of certain parasite stages to the development of tumors.

Study of immunological and serological aspects of parasitic diseases in order to improve means of detecting and preventing infestations; and development of techniques for diagnosis, as well as of development of vaccines, serum and serum fractions, antibody protection, and all potentials of artificial induction of immunity.

Evaluation of special extracts of parasite tissues, organs, and fluids, and of preparations of secretions, excretions, and products elaborated by parasites to determine their antigenic properties. Emphasis would be given to the mechanisms of hatching, moulting, and to the explanation of host-specificity. Killed and modified living larvae of parasites would be tested for their antigenic properties.

Exploratory studies of natural enemies of parasites, such as pathogens, predatory fungi, hyperparasites, and the like, in order to evaluate the promise of this avenue of approach.

Research to develop better methods of protection against the introduction of foot-and-mouth disease and African swine fever (\$205,000)

Need for Increase: With increased foreign travel and commerce and the increased speed of transportation, the threat of foreign animal diseases to the United States is becoming increasingly more serious. Foot-and-mouth disease and African swine fever are of particular importance at this time--foot-and-mouth disease because it is widespread throughout the world, and African swine fever because of its recent spread to Europe. It is urgent that research on foot-and-mouth disease and African swine fever be expanded at the Plum Island Animal Disease Laboratory, Plum Island, New York, in order to develop better methods of protection against introduction of these diseases.

The United States is fortunately free from foot-and-mouth disease, African swine fever, and such other feared animal diseases as rinderpest, lumpy skin disease, fowl plague, and Rift Valley fever.

A strong, vigorous and healthy nation is largely dependent on great quantities of meat, dairy and poultry products. Animal products also contribute in a variety of ways to health and welfare through such products as wool, leather, and biological products. Animal diseases are important limiting factors in the production of livestock and failure to control them leads to heavy losses. With increased population and need for more meat and animal products, research on foreign diseases is vital to assure a continuing meat supply and to safeguard against economic losses to our livestock and poultry industries. If foot-and-mouth disease alone should be introduced into the United States and become established here, it is estimated that production of animals and animal products would be reduced 25 percent.

Plan of Work: The increased funds requested would be used to strengthen research at the Plum Island Animal Disease Laboratory to develop information for use in recognition, diagnosis and effective eradication for foot-and-mouth disease and African swine fever.

(c) An increase of \$103,000 for research on insect taxonomy basic to entomology research.

Need for Increase: Demands for insect identification have doubled in past twenty-five years. Additional funds are urgently needed to increase the present limited staff of insect taxonomists and supporting workers which is not sufficient to do the research that is necessary to provide prompt, accurate insect identifications and related information. In many cases there is a substantial backlog of material awaiting essential research before identifications can be supplied.

Precise information on the identity and distribution of insects is essential to programs concerned with research on harmful insects and the development of methods for their control, and in the management of regulatory activities to exclude, control, or eradicate insect pests. Knowledge of the insect fauna of the world provides the best assurance that any potential new pests will be immediately recognized so that appropriate safeguards can be set up to exclude them, or prompt action taken to control or eradicate them if accidentally introduced. Increasing emphasis on the utilization of beneficial insect parasites and predators to help control destructive insects, and of plant feeding insects to help control weeds, makes it necessary to know precisely which insects to search for, where they may be found, and how to recognize those that may be useful.

The Department is responsible for leadership in research on insect taxonomy and for providing guidance and technical assistance in this field to other Federal agencies and to the States. Only about one-third of the estimated 2 million or more kinds of insects in the world have been described and named. Thousands of species are already of great significance to American agriculture, and others are potentially destructive or useful. Minute differences are very important in recognizing many species, and only highly trained insect taxonomists are able to identify positively known species and describe new ones. For example, it requires trained specialists to distinguish the introduced spotted alfalfa aphid from a common and not too important native aphid occurring on clover in this country; also, to distinguish the face fly, an important pest of livestock, from the common house fly.

The seriousness of the backlog of work is evidenced by the situation that as of December 31, 1962, approximately 10% of the insects, exclusive of the scale insects, received for identification in 1961 and 25% of those received in 1962 have still not been identified because of the shortage of taxonomists and supporting workers. Failure to furnish prompt identifications results in reduced effectiveness of quarantine regulations, delayed applications of insect control practices and uncertainties in the advisability of releasing parasites and predators.

It is not possible with the current number of scientists to make identifications for various important groups of insects, including the scale insects and mealybugs. These are exclusively plant-feeding forms for which neither insecticidal nor biological control practices can be recommended unless the identity of the scale insect is known.

Plan of Work: The increase would be used to strengthen critically needed basic studies on the taxonomy of insects in such important groups as scale insects, and parasitic wasps, and to strengthen research work on beetles, mites, moths and flies. The additional work would be conducted in Washington, D. C., where the National Collection of Insects and essential library facilities are available.

(d) An increase of \$308,000 for soil and water conservation research to meet urgent needs in watershed engineering and management.

Need for Increase: There is widespread need at this time for expanded water-related research, especially in the fields of watershed engineering and management, to provide information for use in the Department's expanding activity in the small watershed program.

There are more than 12,700 watersheds in the continental United States, covering about 85 percent of the total land area, in the size category suitable for projects under the Watershed Protection and Flood Prevention Act and similar authorities. About 8,300 of these watersheds, covering slightly more than 1 billion acres, need project actions for such purposes as flood prevention, water supplies, public recreation, fish and wildlife areas, irrigation, drainage and related group enterprises.

Broad knowledge in the field of hydrology is required for watershed protection and development programs. Urgent research needs include studies of precipitation patterns, rainfall-runoff relationships, water yields, floodflows, sedimentation processes and stream channel control problems as they occur in areas of potential development. Research on these subjects provides such information as characteristic rainfall intensities and areal extent on watersheds; the size and frequency of floods in small watersheds and how such floods are affected by land use and conservation practices; the amount and dependability of streamflow for water supply and the effects of land use and management practices upon streamflow; improved procedures for flood routing; size of spillways required for dams, reservoirs or other water control structures; influence of snow on water supplies from upstream tributaries; and information on ground water hydrology, including ground water recharge in relation to land use, geology, and stream channel characteristics.

The President's conservation message of February 22, 1962 (H. Doc. 348) places great urgency upon expansion of research on natural resources with particular emphasis on water.

There are now four watershed research centers of the six recommended in Senate Document 59, 86th Congress. They are only partially financed and there is urgent need to bring them to full operating level to provide for more rapid progress in research on the hydrologic processes of the regions represented. The work on analysis and interpretation of the hydrologic data now being accumulated also needs to be strengthened in order that the results may be more speedily available for the solution of problems being encountered in the watershed program.

Plan of Work: The proposed increase would provide for research to be undertaken at watershed research centers as follows:

Tucson, Arizona: Research on effects of treatment of southwestern grass and shrublands on water supply and improvement of stream flow in connection with watershed protection measures. Also, on the improvement and management of watershed for sediment control. This watershed center, with satellite locations, provides information of value to the States of Southwestern United States.

Boise, Idaho: Study of runoff characteristics, including water yield from plateau and foothill grazing from areas of the Northwest. Also, runoff and sediment problems of the Northwest wheat-producing area associated with rainfall and snowmelt.

Columbia, Missouri: Research to gain basic information on precipitation-runoff relationships, sedimentation and channel stability in one of the most highly developed agricultural areas of the United States. This watershed center, with satellite locations, provides information of value to several North Central States.

Chickasha, Oklahoma: Research to provide basic hydrologic data relating to the streams and watersheds that transect the break from the plains to the prairies and cross-timber areas. Such data are essential to the effectiveness of the national watershed development program with particular applicability to the Southern Plains.

Beltsville, Maryland: The specialized analyses of hydrologic data by the U. S. Hydrograph Laboratory would be expanded. The objective here is to reduce problems in watershed hydrology to their basic components and to derive computational techniques and procedures for solutions which are applicable nationwide. Pertinent data from the Weather Bureau records and other Federal and State agencies useful in understanding the hydrologic performance of upstream watersheds, as well as those collected at Agricultural Research Service locations, would be employed in the analyses. The analyses would produce prediction equations and working tools directly useful by the Soil Conservation Service and other action agencies engaged in watershed programs.

(e) An increase of \$755,000 for a nationwide food consumption survey

Need for Increase: A nationwide survey of the amounts of various foods consumed by families and individuals and appraisal of the nutrient adequacy of the resulting diets is urgently needed to provide current information for use in developing public programs and policy relating to food production, distribution, control, and consumption. The data are used by Congress, the Department of Agriculture and other Federal agencies, the food industries, educators and other public leaders. Surveys have been made from time to time in past years to provide benchmarks and measures of progress in nutrition in order to form a basis for public programs and policies. The latest survey of household consumption was made in 1955.

There is urgent need for up-to-date information both on food consumed by individuals in various age categories and on food used by households in various regional groups. Current data on household food consumption are needed because many factors have affected food consumption levels and patterns since the last nationwide survey. There have been changes in purchasing power for food; the introduction of new foods or new forms of foods; and new advice on food selection based on advances in the knowledge of nutrition.

The survey proposed for initiation in 1964 would provide data comparable to that obtained in the 1955 and earlier surveys, but the scope would be enlarged to cover all seasons of the year and data on diets of individuals. This broadening of the scope of the study is needed for improved appraisals of adequacy of diets for food and nutrition programs, for production, merchandizing, and management decisions of agriculture and the food industries, and as basic information for public health and other regulatory officials concerned with nuclear fallout, control of food additives, and similar problems.

Systematic information on diets of individuals has not heretofore been available. Such data would improve the focusing of public programs in food and nutrition, and the forecasting of national food consumption patterns with change in age distribution of the population. The Public Health Service and the Food and Drug Administration as well as the Department require these data on a current basis in connection with problems associated with food additives, agricultural pesticides, and radioactive fallout.

Data from the household food consumption survey would provide the basis for:

Estimating the nutritive content of diets and showing the extent to which food supplies meet or fail to meet recommendations for nutritional well-being. Such information is essential for developing food and nutrition programs to improve food selection and food management practices.

Estimating the potential demand for agricultural products. The data would be widely used not only by the Department but also by food producing, processing, marketing, and distributing organizations throughout the country.

Department decision-making and program evaluation relative to food production, distribution, and consumption. For example, preliminary plans for the Pilot Food Stamp Program initiated in 1961 were based in large part on the 1955 survey findings.

Plan of Work: Original data would be obtained on quantities used and expenditures for various foods from about 10,500 households, and on food consumption from about 7,000 individuals, together with economic data needed for analyses and interpretation.

During fiscal year 1964, on the basis of detailed plans for the survey, one or more contracts would be made for the collection, coding, and editing of data based upon a scientific sample design and careful pretesting of schedules. In later fiscal years, 1965 and 1966, basic data would be processed, analyzed, and published. Further special analyses would be made following the publication of the basic data. Principal costs would be in the first two fiscal years--1964 and 1965--with reduced costs in 1966. As the results of the nationwide surveys are analyzed and published, small-scale special-purpose surveys would be undertaken to focus on the problem areas revealed by the larger survey.

Staff of the Economic Research Service would assist in overall planning, supervision, and analysis of data in order that the data obtained would be useable for a variety of Departmental purposes. It is also anticipated that other government agencies, particularly the Department of Health, Education and Welfare, would provide assistance in the conduct of the survey.

(f) A decrease of \$2,780,000 due to elimination of nonrecurring amounts in 1963 for construction of laboratories and improvements.

The following nonrecurring amounts, to remain available until expended, were provided under this appropriation in fiscal year 1963, for construction of facilities and improvements:

1. Additional facilities for avian leukosis research,
East Lansing, Michigan -\$450,000
2. Facilities for crops, entomology, and related
agricultural engineering research, Tucson,
Arizona -585,000
3. Regional fruit and nut crops facilities for
the Southeast, Byron, Georgia -500,000
4. Facilities for small fruit research,
Carbondale, Illinois -165,000
5. Additional facilities for Southern Piedmont
soil and water research, Watkinsville,
Georgia -125,000
6. Additional soil and water conservation research
facilities, Mandan, North Dakota -400,000

7. Soil and water conservation research facilities, Sidney, Montana	-395,000
8. Improvement of heating, water, and electrical systems at the Agricultural Research Center, Beltsville, Maryland	<u>-160,000</u>
Total decrease	<u>-2,780,000</u>

(g) A reduction of \$148,000 to reflect estimated savings due to the installation of a centralized data processing operation (MODE) for payroll and personnel data. An explanation of this reduction is included in the Preface to these Explanatory Notes. This reduction is distributed by research activities as follows:

Farm research:

Animal husbandry	\$11,400
Animal disease and parasite	17,200
Crops	34,800
Entomology	17,500
Soil and water conservation	22,000
Agricultural engineering	<u>5,800</u>
Total, farm research	<u>108,700</u>

Utilization research and development:

Cereal and forage crops	7,400
Cotton, wool and other fibers	7,500
Fruits and vegetables	5,000
Oilseeds	4,200
New and special plants	2,700
Poultry, dairy, and animal products	<u>7,200</u>
Total, utilization research and development	<u>34,000</u>

Nutrition and consumer use research:

Human nutrition	2,700
Consumer and food economics	1,700
Clothing and housing	<u>900</u>
Total, nutrition and consumer use research	<u>5,300</u>

Total, Research	<u>148,000</u>
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Plant and Animal Disease and Pest Control

(2) A net increase of \$1,359,000 for plant and animal disease and pest control consisting of:

(a) A decrease of \$927,000 under the project "Plant pest control" consisting of:

1. Gypsy moth (\$750,000) - Because of resistance to the use of DDT, the gypsy moth eradication program was interrupted in fiscal year 1958. Since then, the program has been largely one of containment, plus intensive efforts to develop alternate methods of control and quarantine enforcement to prevent long-distance spread of infestation and more efficient and effective techniques for detection surveys. After giving effect to the proposed reduction of \$750,000, there will remain \$1,298,300 for operation of the program in fiscal year 1964. It is estimated that this will permit cooperation with the States in eradicating outlying infestations and suppressing gypsy moth populations in the generally infested area which present a hazard of spreading to uninfested areas.
2. Imported fire ant (\$177,000) - Methods improvement work at Gulfport, Mississippi has developed a new corncob grit bait which shows promise of improving insecticide treatments in the eradication program. After giving effect to the proposed reduction of \$177,000, there will remain \$2,460,200 for program operations in fiscal year 1964. It is expected that this amount would be sufficient to permit continuation of quarantine enforcement with emphasis on treatment of peripheral infestation in order to prevent spread to uninfested areas and continued orderly progress in the cooperative eradication work with the States.

(b) An increase of \$484,000 under the project "Plant quarantine" to provide the additional staffing necessary at ports-of-entry for greater protection against the introduction of foreign pests and diseases.

Need for Increase: The number of travelers and the volume of goods entering the country determine the level of plant quarantine inspection service needed to prevent the introduction and spread of pests and diseases. These factors are beyond the control of the Department, but the risk of foreign pests and diseases gaining entrance is directly related to the volume of foreign travel and commerce.

In fiscal year 1962, a record total of 173 million persons entered the United States bringing with them 23.5 million pieces of baggage. In addition, the number of aircraft arriving from overseas increased by approximately 8,000 over 1961. Many of these are large jet aircraft which make it possible for infested and infected plant materials to reach this country from any part of the world within a few hours. Destructive foreign pests and diseases capable of attacking virtually every major crop grown in the United States are being intercepted regularly at ports-of-entry. In fiscal year 1962, plant quarantine inspectors made a total of 33,033 pest interceptions--an average of more than 90 each day.

Plant and animal quarantine protection is essential to avoiding costly eradication and control programs resulting from foreign pests and diseases gaining entry into this country. The cost to the Federal Government of plant quarantine protection, estimated to total \$8,509,000 for fiscal year 1964, is small (less than 4/100 of 1 percent) in relation to the \$45 billion estimated value of the crops being protected, (major crops \$23 billion, grasslands \$2 billion, and timberlands \$20 billion).

The present plant quarantine inspection staff is not adequate to cope with the continued sharp increase in foreign travel and trade. Notwithstanding appropriation increases in recent years, many ports are still understaffed as the risk of pest entry becomes more acute.

The following items are illustrative of the increasing problems in maintaining port-of-entry protection against pest and disease entry:

Commercial air traffic. A record total of 137,294 aircraft were inspected in fiscal year 1962. Inspection services must meet the peak workload requirements caused by the nearly simultaneous arrivals of jet airliners with large passenger loads. The rapid development of air cargo is resulting in the establishment of additional separate cargo terminals at international airports, which require staffing. Airline officials state that further development can be expected in the importation of perishable agricultural material and other products by air. Foreign pests regularly arrive on these flights. For example, the khapra beetle has been found regularly on cargo planes.

Military air traffic. There is urgent need for better quarantine coverage of military air traffic from overseas flights which arrive at air bases throughout the country. In many areas it has been necessary to rely on military personnel to inspect such flights and, while they have been most cooperative, this arrangement has not given satisfactory coverage. Plant quarantine inspectors are needed to participate in these inspections, and to train military personnel in inspection and safeguard techniques and to keep them aware of the importance of complying with quarantine restrictions.

Inter-American Highway. During fiscal year 1962, a record total of 24.7 million automobiles entered the United States over the Mexican border. This traffic frequently brings to border ports of entry such destructive pests as the Mexican fruit fly, citrus black fly, Irish potato weevil, several species of avocado weevils, and the golden nematode. Despite the fact that the Inter-American Highway is not yet complete, cars are now arriving at the border from as far away as Panama. Traffic over the highway originating from Central American countries brings additional pests and diseases not formerly encountered along the Mexican-United States border. The increasing vehicular traffic over the border requires the opening of new ports of entry as well as the enlargement of inspection facilities at established ports, both of which require additional plant quarantine staff.

Agricultural exports at all-time high. In fiscal year 1962, more than \$5 billion worth of agricultural products were exported. Most exports were plant products requiring inspection and certification by plant quarantine inspectors in order to be eligible for entry into the importing country. This service contributes materially to the maintenance of foreign markets for United States products. In fiscal year 1962, more than 38,000 certificates were issued for agricultural shipments destined to 154 foreign countries. The Economic Research Service of the Department reported in September, 1962 that one out of every five acres of harvested crops were for export, including more than half of the wheat, dried edible peas, rice, and hops and about one-third of the cotton, soybeans, and tobacco.

Plan of Work: The proposed increase would provide for 42 additional plant quarantine inspectors and for the transfer of an additional \$68,200 to the Bureau of Customs to enable that agency to employ additional inspectors needed for inspection of incoming passengers' baggage. The plant quarantine inspectors would be assigned to ports where the danger of pest introduction is most critical, including (1) newly opened ports of entry, (2) enlarged inspection facilities at established ports, (3) other established ports where the work load has increased to the point where it cannot be handled by the existing staff, and (4) military air bases. On the basis of current and foreseeable needs, they would be stationed as follows:

<u>Arizona</u> - Nogales	<u>North Carolina</u> - Wilmington
<u>California</u> - Calexico	<u>Oklahoma</u> - Oklahoma City
<u>Delaware</u> - Dover	<u>Ohio</u> - Cleveland
<u>Florida</u> - Tampa, Jacksonville	<u>Pennsylvania</u> - Philadelphia
<u>Goergia</u> - Savannah	<u>Texas</u> - Brownsville, Donna, Eagle
<u>Illinois</u> - Chicago	Pass, El Paso, Harlingen,
<u>Louisiana</u> - New Orleans	Hidalgo, Laredo
<u>Maryland</u> - Baltimore	<u>South Carolina</u> - Charleston
<u>Massachusetts</u> - Boston	<u>Virginia</u> - Norfolk,
<u>Michigan</u> - Detroit	(Dulles Int.l airport)
<u>Missouri</u> - Kansas City	<u>Washington</u> - Seattle
<u>New Jersey</u> - McGuire AFB	<u>Puerto Rico</u> - San Juan
<u>New York</u> - New York City	

Port-of-entry inspection is being supplemented by development of improved inspection techniques and procedures; continuing and expanding efforts to inform international travelers about quarantine restrictions; enlisting further cooperation from other border inspection services as well as Federal, State, and local pest control officials in the enforcement of plant quarantines; working with officials of other countries, particularly those of North America, on mutual quarantine problems; and continued intensive training of the inspection staff in both the technical and regulatory aspects of plant quarantine enforcement.

(c) An increase of \$250,000 to provide for rental of space at air terminals handling international air traffic pursuant to Public Law 87-255.

Note: This increase is distributed by projects as follows:

Plant quarantine	\$230,000
Animal inspection and quarantine	20,000
	<u>250,000</u>

For convenience, a single justification of the total increase is presented at this point.

Need for Increase: The Agricultural Research Service of the Department conducts plant and animal quarantine inspection at all air terminals in the nation handling international air flights. The space required for conducting necessary Federal inspection activities at these airports heretofore has been furnished without cost to this Department and to the Bureau of Customs, Immigration and Naturalization Service and the Public Health Service.

Under P.L. 87-255, approved September 20, 1961, the Department would begin in fiscal year 1964 to pay for space at such airports at a rental rate to be negotiated by the General Services Administration. The estimated annual rental cost of airport space currently occupied to perform essential agricultural quarantine inspection activities is approximately \$250,000. Such space would not duplicate space required at airports by other Federal agencies. The estimated cost is based upon a computation, airport by airport, of the space requirements and the estimated rental cost at each airport.

(d) A decrease of \$750,000 under the project "Animal disease control and eradication" for eradicating screwworm in the Southwest.

The cooperative screwworm eradication program in the Southwest was initiated in February 1962 through redirection of funds from other activities on a temporary basis in order to take advantage of the unusual cold in the area which had severely reduced native screwworm populations in the average overwintering area. The Federal share of the cost of the program in fiscal year 1962 was \$1,044,910.

The Second Supplemental Appropriation Act, 1962, approved July 25, 1962 (available only in 1963) included \$2,750,000 for continuing this program through June 30, 1963. For fiscal year 1964, the Federal share of continuing program costs is estimated to be \$2,000,000.

By July 1, 1963, it is anticipated that most of Texas, and all of New Mexico, Oklahoma, Arkansas, and Louisiana will be free of screwworms and an artificial barrier supported by the continuous and systematic release of sterile screw-worm flies will be in operation along the Mexican-United States border. Major equipment purchases and necessary alterations and modifications in connection with existing facilities will be completed during fiscal year 1963.

The comparison of financing of this program for fiscal years 1963 and 1964 is as follows:

Second Supplemental Appropriation Act, 1962 (available only in 1963)	\$2,750,000
Anticipated supplemental pay act costs	22,800
	<u>2,772,800</u>
 1964 Budget Estimates to continue financing in fiscal year 1964	 <u>2,022,800</u>
 Decrease	 <u>-750,000</u>

In fiscal year 1964, the program will include production and release of sterile flies to maintain the barrier zone, inspection along the southern and western borders of the eradicated area to prevent entry of infested animals, surveys to determine the success of the program, and eradication of any infested spots found in the eradication area. It is estimated that the cost of eradicating infested spots will be considerably less in 1964 than in 1963, so that annual savings of \$750,000 can be realized.

(e) An increase of \$2,056,000 under the project "Animal disease control and eradication" for eradicating hog cholera.

Need for Increase: Hog cholera, an acute, usually fatal virus disease, kills more swine above weaning age than any other infectious agent. The cost of the nation's swine producers due to hog cholera is estimated to be \$40 to \$60 million annually including losses from death on the farm, condemnations at slaughter, and the continuing cost of vaccination. Further, eleven foreign countries restrict imports of pork products from the United States because of hog cholera, thereby causing an estimated loss of potential markets of 60 million pounds annually.

Also, the existence of hog cholera in the United States presents disease problems to Canada. While the disease has been eradicated in Canada except for sporadic outbreaks which have been quickly suppressed, several recent and costly Canadian outbreaks have been traced to pork imports from the United States.

On September 6, 1961, P.L. 87-209 was approved authorizing and directing the Department to initiate a national cooperative hog cholera eradication program. The Secretary appointed an eleven-member national hog cholera advisory committee to assist in the development of a program, and steps were undertaken by the Department to develop plans and procedures necessary for the eradication program. Developmental activities in fiscal year 1962 cost \$96,639. For fiscal year 1963, Congress appropriated \$2,000,000 for the program (the obligations, including increased pay costs, are estimated at \$2,053,200).

Since hog cholera is a highly virulent and infectious disease, its eradication requires strict adherence to prescribed procedures on a nationwide basis. Detailed plans and procedures for the program have been developed in cooperation with State disease control officials and industry groups. The plans provide for a high level of vaccination; heat treatment of garbage fed to swine; restrictions against the use of virulent virus vaccines; prompt reporting and investigation of hog cholera outbreaks; quarantine of infected and exposed premises; and controls over movement of swine; prompt disposal of infected and exposed swine; proper cleaning and disinfecting of all infected premises and swine-handling facilities; sharing of indemnities paid for infected and exposed swine; and field trial studies to accompany eradication activities.

With funds available for 1963, the Department has been able to work with the States in the initiation of cooperative eradication programs and has adopted Federal regulations governing the interstate movement of swine, an essential measure in preventing the spread of the disease. These regulations prohibit the interstate movement of virulent virus and establish requirements for health inspection and vaccination of feeder pigs and breeding swine moving in interstate commerce. They do not prevent the movement of swine for slaughter. These Federal activities will be carried out largely at stockyards, market centers, and in other channels of trade to assure the orderly movement of healthy swine.

It is anticipated that all States will cooperate in the program in fiscal year 1963. The extent of the State participation will vary in considerable part due to many State legislatures not meeting until the early months of calendar year 1963 to provide funds for the program. Forty States have established committees representing the swine industry, similar to the Department's Hog Cholera Advisory Committee, to assist in the eradication program. Regulatory measures to contain the disease have been placed in effect in several areas of the country, including some of the States with the highest swine populations. Vaccination against hog cholera, an important support for the eradication program, continues to increase. These encouraging developments during the first year of the program, combined with the continuing and expanding activity of cooperative State-Federal program activity, provide a foundation for advances in hog cholera eradication in fiscal year 1964.

Plan of Work: Essential activities initiated during fiscal year 1963 are expected to continue and expand throughout fiscal year 1964. When in full operation, it is estimated that the program will cost the Federal government approximately \$10 million per year for four or five years. The proposed increase of \$2,056,000 would bring the Federal share of the cost to a level of \$4,158,300 in 1964 (including pay costs), and would provide for an additional 150 man-years of veterinary and livestock inspection personnel needed for:

Enforcement of Federal interstate regulations to prevent spread of the disease and increased supervision at livestock market centers approved to handle swine movements.

Providing trained personnel to assist in thorough and effective epidemiological investigations of reported outbreaks.

Implementing procedures necessary to eradicate the disease, including bi-monthly inspection of all garbage-feeding establishments; regular inspection of exposed herds under quarantine and supervising authorized removals of swine under quarantine for slaughter; tracing swine movements associated with disease outbreaks to locate infection; proper cleaning and disinfecting of all infected premises and swine-handling facilities.

Participating with States in final eradication procedures, where preparatory work undertaken in 1963 is sufficiently complete to undertake it.

Cost of Federal participation in sharing indemnity payments, not to exceed one-half, for infected and exposed swine removed for slaughter.

Expanded cooperative program activities with States as they expand their activities in fiscal year 1964.

(f) A decrease of \$150,000 under the project "Animal inspection and quarantine" due to elimination of non-recurring funds in 1963 for construction of import livestock inspection facilities along Canadian border.

It is expected that acquisition of the necessary sites and the construction work will be completed in fiscal year 1963. Therefore, continuation of these funds is not required for fiscal year 1964.

(g) An increase of \$173,000 under the project "Animal inspection and quarantine" to prevent the introduction and dissemination of foreign animal diseases costly to the Nation's livestock industry.

Need for Increase: The health and numbers of this Nation's livestock, a mainstay of our national economy, are unmatched by any other country. This is due in large measure to inspection and quarantine activities which exclude dangerous and destructive animal diseases not prevalent in this country. The risk of introducing foreign diseases or the vectors that transmit them has increased tremendously in recent years. This results from a combination of such factors as intensification of animal production in many areas of the world; the spread of diseases to new areas and countries; steadily increasing world trade and travel; and the rapidity with which animals are moved from one part of the world to another which has eliminated effective travel time barriers.

The Nation is in constant danger of invasion by such animal diseases as foot-and-mouth, rinderpest, African swine fever, European fowl pest and others; as well as various kind of internal and external parasites which carry foreign animal diseases. Introduction of any of these superimposed upon already established diseases, would bring substantial losses in the livestock and poultry industries. Losses to the economy from an outbreak of foot-and-mouth disease can not be measured in dollars alone. However, annual losses to the livestock industry could be as much as 25 percent or more. If firmly established, European fowl pest would practically wipe out the poultry industry. Animal inspection and quarantine activities must be strengthened to provide the protection necessary against foreign animal disease entry.

To preclude effectively the entry of exotic diseases, exacting inspection and quarantine procedures must be applied to all animals and birds at air and ocean ports of entry, or brought in from Canada and Mexico through many land border ports. These include physical examinations, diagnostic tests, precautionary treatments against ticks and other parasites, and quarantines for variable periods of time to assure freedom from disease. Along the land borders, close surveillance must be maintained to prevent the entry of potentially dangerous stray or smuggled animals and birds. Zoo animals, coming principally from countries where many exotic diseases are constantly present, represent an unusual risk in that they may be inapparent carriers of livestock diseases. They must be held under permanent post-entry quarantine in approved zoological parks.

Imported meats and animal byproducts, such as hides, wool, bones, and glands, represent a potential risk of introducing exotic diseases. In fiscal year 1962, such importations exceeded 1 billion pounds. Inspection and supervision of these products is necessary not only at ports-of-entry but also at some 200 commercial establishments at interior locations where they are distributed for further handling and processing.

The increasing threat of exotic disease introduction intensifies the need to provide additional inspection and quarantine service at ports-of-entry around the perimeter of the United States and at destination establishments at interior locations for animals and products restricted under post-entry conditions. It has not been possible to keep pace with the inspection and quarantine workload at many ports-of-entry, and there are some where such service cannot now be provided. There is need for more inspection of cargo on docks and particularly at international airports; better coverage of sealing of meat lockers on ships; and intensified garbage control at locations where the risk of contamination is especially serious. The cost of increased inspection and quarantine service is small compared to the potential losses from introduced exotic diseases and the cost of eradicating them.

Plan of Work: The proposed increase would provide for 14 man-years of veterinary and other technical personnel to be assigned where the risk of disease introductions is greatest at ports-of-entry approximately as follows:

Alabama - Mobile
California - Los Angeles, San
 Diego
Florida - Miami
Maryland - Baltimore
Massachusetts - Boston
Montana - Helena

New York - Buffalo, New York City
North Dakota - Bismarck
Pennsylvania - Philadelphia
Texas - Corpus Christi
Virginia - Norfolk

Personnel assigned to ports-of-entry will provide inspection and quarantine services at nearby international airports, military installations, commercial products establishments, and approved zoological parks.

(h) An increase of \$167,000 under the activity "Animal inspection and quarantine" to provide for increased activities required under the Virus-Serum-Toxin Act to assure the safety and potency of veterinary biologics.

Need for Increase: The Virus-Serum-Toxin Act seeks to prevent the production and marketing in interstate commerce of worthless, contaminated, dangerous or harmful veterinary biologics. Enforcement of the Act is accomplished under a system of licensing, inspection and testing. The workload has expanded greatly because of the continuing increase in the number and kinds of veterinary biologics. New products are always in the process of development, and these must be critically evaluated before and after licensing to assure safety and potency.

Many thousands of production lots (serials) of some 200 different vaccines, bacterine, serums, diagnostic agents, and related products are marketed each year. In fiscal year 1962, a total of 4.7 billion doses were produced with an estimated value of \$75 million. When such products meet production standards prescribed by the Department, they are important tools in the hands of veterinarians and farmers for the prevention and treatment of livestock and poultry diseases.

Veterinary biologics improperly produced and not completely tested before use may themselves constitute disease hazards. Contaminated products have been found in several instances to be the cause of the introduction and spread of diseases. Impotent products are equally dangerous in that they do not do the job intended and leave a false sense of security. This is particularly a problem in the increasing use of live virus vaccines which now constitute about 90 percent of total production. The complexity of the live virus products and their potential for good or evil makes it extremely important that expanded inspection and check-testing service be provided. Such enforcement work must keep abreast of expansion and new developments in the veterinary biologics industry in order to provide for consumer protection.

To see that veterinary biologics are manufactured, tested, labeled and marketed so as to assure safety and potency, it is necessary to increase effective "in plant" inspection by inspectors competent in all phases of biologics production. Such inspectors will make certain that licensed manufacturers use approved methods of production; that sanitation is adequate; that products are properly labeled and tested by approved methods before release to farmers and veterinarians.

Department check-testing at the new National Animal Disease Laboratory, which is a service to licensing and inspection activities, has disclosed many unsatisfactory production lots (serials) of vaccines and diagnostic agents previously found satisfactory by producers on their own required tests. For example, in 1962, production lots of erysipelas vaccine sufficient to vaccinate an estimated 150,000 swine against this disease were found impotent; 27 production lots of Brucella abortus vaccine, enough to vaccinate over 200,000 calves in the Department's program to eradicate brucellosis, were found impotent or contaminated; 18 cultures used by certain manufacturers in the production of several types of bacterins for blackleg and redwater disease of cattle were found contaminated and otherwise unsuitable for production purposes; production lots of bovine rhinotracheitis vaccine produced by 4 of the 13 licensed manufacturers of this vaccine were substandard in potency. When these and similar conditions were found, the licensed manufacturers were required to recall from

the market and to stop marketing all unsuitable products. Such check-testing has of necessity been limited to only a portion of the 200 licensed products. But it indicates that many other production lots may likewise be substandard and should not be marketed.

Because of the increasing workload and activities under the Act, it is necessary to expand check-testing and development of test standards to the full extent of the capabilities at the National Animal Disease Laboratory. With more adequate inspection and testing, it would be possible to save the livestock and poultry industry millions of dollars and to insure confidence in the use of approved veterinary biologics for the prevention and treatment of diseases.

Plan of Work: The proposed increase would permit expanding the regulatory staff by approximately 13 man-years to conduct increased inspection at plants and to permit additional check-testing and development of test standards at the service laboratory for biologics where there is immediate concern as to safety and potency.

(i) An increase of \$148,000 under the project "Pesticides regulation" to provide for additional registration and enforcement activities related to "economic poisons" regulated under the Federal insecticide, Fungicide, and Rodenticide Act, as amended, and related laws.

Need for Increase: The complexity of chemical mixtures available for use as pesticides on farms and ranches as well as by housewives, home gardeners, hospitals, and food establishments requires that pesticide formulations be adequately labeled and effectively regulated. Many pesticide products are always in the process of development. The procedures used by industry to screen the promising ones for effectiveness and safety must be critically evaluated before sale to the public is legalized. Further, the growing concern over chemical residues in food intensifies the need to evaluate all the ingredients in a formulation to determine that use of the product will not result in treated foods containing residues.

Registration of an "economic poison" requires that the label on the product carry a fully informative ingredient statement; adequate directions for safe and effective use; and any necessary warnings to prevent injury to man and to beneficial animals and useful plants. This involves detailed examination and evaluation of all proposed label claims by scientists competent in the various phases of pesticide chemical use. The number of new registrations, and amendments to existing registrations, has increased steadily in recent years. This trend is expected to continue.

Enforcement activities must keep abreast of the expanding registrations. The increased number of registered products under the Act requires more policing of shipments in interstate commerce to assure compliance with the regulatory provisions of the statute. This involves the collection and thorough laboratory evaluation of official samples to determine compliance with the Act. Particular attention is given to stability of product, whether labeling meets requirements of the law, and whether precautionary instructions are adequate. There is need for additional scientific and administrative investigators to carry out the collection, examination and evaluation of official samples and to implement appropriate legal action.

The accuracy of methods of analysis used by manufacturers in determining the time residues remain on food and feed after treatment must be checked. Largely, it has been necessary to accept data presented by the registrant to show that no residue on food or feed will result from directed use. There is need for additional staff to review data in support of "no residue" registrations.

Plan of Work: The proposed increase would provide for 12 man-years of scientific and supporting personnel to be assigned to registration and enforcement activities associated with an expanding and highly complex industry. The additions to the present staff would include field inspectors, residue chemists, entomologists, and laboratory aides. This staff would permit needed expansion of laboratory evaluation of products intended for use on animals for control of such pests as ticks, cattle grubs, scabies mites, etc. Also, products intended for use as poisons or repellents for fish, bird or mammals could be more adequately evaluated for effectiveness.

(j) A reduction of \$92,000 to reflect estimated savings due to the installation of a centralized data processing operation (MODE) for payroll and personnel data. An explanation of this reduction is included in the Preface to these Explanatory Notes. This reduction is distributed between activities as follows:

Plant pest control	\$31,000
Plant quarantine	10,900
Total, plant disease and pest control	<u>41,900</u>
Animal disease control and eradication	43,800
Animal inspection and quarantine	4,200
Total, animal disease and pest control	<u>48,000</u>
Pesticides regulation	<u>2,100</u>
Total, plant and animal disease and pest control	<u>92,000</u>

Meat Inspection

(3) A net increase of \$1,446,000 consisting of:

(a) An increase of \$1,575,000 to provide for additional meat inspection staff to meet increasing mandatory meat inspection workload.

Need for Increase: Under the meat inspection laws, Federal inspection is mandatory for meat and meat-food products transported through interstate or foreign commerce. The Department is required to provide such inspection upon the request of meat packing companies which have met certain qualifications. Demands by the industry for Federal meat inspection have increased continuously in recent years. The following table reflects the steady increase in establishments requiring Federal Meat Inspection and the number of widely dispersed cities and towns in which they are located:

<u>At end of Fiscal Year</u>	<u>Establishments</u>		<u>Cities and Towns</u>	
	<u>Number</u>	<u>Percent Increase over Prior Year</u>	<u>Number</u>	<u>Percent Increase over Prior Year</u>
1960	1,396	- -	572	- -
1961	1,451	3.9	599	4.7
1962	1,511	4.1	623	4.0
1963 (Estimated)	1,581	4.6	665	6.7
1964 (Estimated)	1,633	3.3	700	5.3

In the 1963 Budget it was estimated that 1,550 establishments in 650 cities and towns would require inspection by June 30, 1963. Those estimates were exceeded six months earlier than expected. By December 31, 1962, there were already 1,557 establishments in 651 cities and towns. The industry is continuing to expand and the above estimate of the additional establishments and cities and towns to be serviced during the remainder of fiscal year 1963 and in 1964 is believed to be very conservative.

The continued increase in demands for meat inspection services makes it extremely difficult to spread the present inspection force to meet the needs. Inspector assignments are under constant review to attain the most efficient use of the total manpower, but the problems resulting from insufficient meat inspectors are rapidly becoming more acute.

In addition to the sharp increase in establishments, there is a continuing high demand for meat on the part of consumers, a high level of livestock population, and the meat packing industry is presently undergoing significant technological changes to increase the volume of production in order to meet consumer demands.

These new techniques require increased time and adequate laboratory evaluation to support plant inspection of processed meat and meat-food products. Adulteration of products by excessive use of chemical additives, extenders, water, and other cheap ingredients in lieu of meat is a continuing problem. Particularly with respect to "heat and eat" products, the inspection force must continue to remain abreast of these developments.

Federal meat inspection must assure the consumer that meat and meat-food products moving in interstate commerce have been prepared under sanitary conditions and are wholesome and properly labeled. The Department has no control over the volume of livestock sent to slaughter and there is no ready made formula to follow in anticipating where and when inspection demands will arise. There are many factors which affect inspection requirements, among which are business trends and consumer demands.

The proposed increase represents the minimum needed to provide the additional inspection to meet the increasing decentralization and volume of work. It is essential that the inspection staff be sufficiently adequate to avoid an unnecessary and uneconomic slow-down in operations at packing and processing plants. It is expected that additional inspectors will be required to meet demands for inspection during extra shifts. It will continue to be necessary to assign only 2 inspectors working 12-hour shifts each to cover plants operating on a round-the-clock basis (3 shifts). The cost of this overtime is paid by the packing establishment.

In fiscal year 1964, it is estimated that the net cost of within-grade salary advancements will be approximately \$255,000. Turnover of meat inspection personnel is not sufficient to offset additional within-grade costs so that such costs must be met either through increased funds or by attrition in the inspection force. The additional cost of within-grade advancements is estimated to be the equivalent of approximately 32 inspection man-years in 1964. Also, the need to finance an additional two days at the end of 1964 over the base 260 days for each employee would make it necessary to absorb approximately 22 man-years of inspection service through attrition unless increased funds are provided.

Plan of Work: The proposed increase would provide for an increase in the inspection force of approximately 166 man-years of employment and related costs and for the additional costs of within-grade salary increases and the additional two days of salary costs in fiscal year 1964 as compared with 1963.

(b) Reduction of \$129,000 to reflect estimated savings due to the installation of a centralized data processing operation (MODE) for payroll and personnel data. An explanation of this reduction is included in the Preface to these Explanatory Notes.

(4) An increase of \$4,626,500 for pay costs pursuant to P.L. 87-793. (An over-all explanation of increases for pay act costs is included in the Preface to these Explanatory Notes in Volume 1).

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The 1964 Budget includes \$105,744 (an increase of \$87,723 above the amount appropriated in 1962) for mandatory reimbursement to the Employees Compensation Fund for payments made from that fund in the fiscal year 1962 on behalf of Agricultural Research Service employees. This increase is included within the 1964 Budget estimates discussed in the foregoing justifications. An over-all explanation of Employee Compensation Fund payments is included in the Preface to these Explanatory Notes in Volume 1.

STATUS OF PROGRAM

The Agricultural Research Service carries out the Department's scientific research in the fields of livestock, crops, soil and water conservation, agricultural engineering, utilization research and development, and nutrition and consumer use. It conducts both fundamental and applied research in these fields, utilizing physical, biological and economic sciences.

Research is conducted at the 10,378-acre Agricultural Research Center, Beltsville, Maryland, and at numerous locations in the States, Puerto Rico, Virgin Islands, and in foreign countries. A large part of the research is in cooperation with State agricultural experiment stations and other public and private agencies. Research is also conducted under contract with various public and private agencies and institutions.

Programs for control and eradication of plant and animal diseases and pests are conducted to prevent introduction into the United States of pests and diseases of foreign origin, to prevent the spread interstate of those within the country, and to control and eradicate them where found. These programs are conducted at numerous locations in all States, Puerto Rico and Virgin Islands, on farms and ranches, at sea, air, and border ports of entry, in public stockyards and establishments licensed under the Virus-Serum-Toxin Act, etc. The Federal Insecticide, Fungicide, and Rodenticide Act, as amended, is administered and enforced to insure that pesticide products in interstate commerce are correctly labeled, can be used safely, and are effective for intended use.

Work of the Service also includes enforcement of the Federal meat inspection and humane slaughter laws to assure production of disease-free, clean, and wholesome meat and meat products for both civilian and military use and for foreign commerce. This is accomplished by supervising slaughtering and meat processing operations at meat packing plants, application of control over imported meats to assure the same protection as in the case of meats produced domestically, and supervision of a system of certifying meats for export to keep foreign markets open to American meats.

As a part of its regular programs, the Agricultural Research Service conducts research and prepares plans for preventing or combating foreign plant and animal diseases which might be intentionally introduced into the United States. Some research is also conducted on devising protective measures for decontamination and utilization of crops, animals, or soils affected by direct radiation or radioactive fallout, and personnel are trained for radiological monitoring services to minimize the effects of any radioactive fallout on the nation's supply of meat and meat food products.

FARM RESEARCH

Current activities: Investigations are conducted on production methods and improvement of field and horticultural crops and of farm livestock, poultry, and domestic fur animals, including means of control of plant

and animal pests and diseases, which will be effective, economical, and avoid residue hazards. Soil and water conservation research is conducted to develop new and improved soil and crop management practices, improve irrigation and drainage methods, develop information on watershed hydrology, improve fertilizers and liming materials, and determine the relations of soils to plant and animal nutrition. Engineering studies are made to improve the mechanization of crop and livestock production and the harvesting and processing of farm crops, to develop better types of farm structures and new uses for electricity on farms, and to adapt electrical equipment to farm use. Research covers not only continental agricultural problems, but also those of Alaska, Puerto Rico, Virgin Islands, and Hawaii.

In recent years farm research has been continuously reviewed to emphasize work which would meet problems of agricultural surpluses, as well as market demands. This has included breeding and development of the meat-type hog to reduce fats in surplus, production of milk with high solids and lowered fat content, corn with waxy starch for glues and adhesives, corn with high amylose content for industrial uses, etc. The program for introduction and development of new crops has been expanded and basic research essential to agricultural needs has been steadily increased.

Selected Examples of Recent Progress

Animal Husbandry Research

1. Dairy cattle sires reflect differences in forage utilization based on tests of their daughters. Cooperative research with the Tennessee Agricultural Experiment Station is under way to determine the genetic variability within the Jersey breed with respect to forage utilization and production. Mating plans utilize sires of diverse blood lines. Half of the heifers of each resulting sire group is fed only on roughage through first lactation, and the other half is given a ration of roughage plus grain. Production records have been finished for a total of 98 first lactation females, 48 on forage only and 50 on forage plus grain. Eight sire groups are included.

Analysis of these records show that there were significant differences between the rations in milk yield, butterfat yield and fat-corrected milk. There were also differences between the sires within each ration. Significant differences occurred between the sire groups in their ability to consume large amounts of forage and thus convert it into milk. Desirable sires proven under one environmental condition were also found to be desirable under other conditions.

2. Crossbreeding dairy cows does not affect reproduction but provides higher livability. Dairy cattle research in cooperation with the Illinois Agricultural Experiment Station has shown significant differences in livability between purebred and two-breed crossbred or 3/4-breds in heifers from birth to one year of age and cows over all lactations. There were twice as many purebreds lost from the herd

as there were of crossbreds or criss-crosses. An analysis of milk production of the surviving cows compared with those lost at an early age in each breed group showed little genetic relation between livability and production level. This study indicates that cross-breeding provides a means for immediate and marked improvement on livability.

3. Low moisture silage stored in conventional silos. In each of two successive years, first-cutting alfalfa was mowed, conditioned and harvested as either hay, barn dried with heated air, or as low-moisture silage (about 45 percent dry matter) stored in two 10' x 40' upright tile silos. Careful, but practical, sealing procedures of the silage were followed. Efficiency of dry matter preservation was high, 88.2 to 95.4 percent. The feeding value of the silage was equal or superior to the hay as measured with milking cows and growing heifers of dairy breeds.

Previous work had shown that silage quality and acceptability by dairy cattle were improved when the moisture content of the forage is markedly reduced prior to storage in gas-tight silos, but it had generally been assumed that preservation of silage would be difficult in the conventional tower silo.

4. Crossbreeding reduces death losses in beef calves. Preliminary reports from cooperative crossbreeding experiments at two locations stress the reduction in death losses and resultant increases in the calf crop in crosses among the British breeds of beef cattle--a factor overlooked in earlier, less well controlled experiments. In Nebraska, crossbred matings resulted in an 80 percent calf crop weaned from 3-year-old heifers as compared to 72 percent for purebreds. In Virginia, the average of three calf crops weaned from crossbred matings was 87 percent as compared with 73 percent for purebreds. In both experiments crossbred calves also had approximately 5 percent faster growth rates.
5. All grain ration tested for fattening beef cattle. Three fattening trials, involving 74 steers, indicate that gains of beef cattle consuming rations containing 2 percent crude fiber (primarily ground shell corn) compared favorably with those of cattle receiving 7 percent crude fiber (primarily ground ear corn). Performance likewise was not significantly affected by increasing the vitamin A level in the ration to approximately 5 times that recommended by the National Research Council. While this high level of vitamin A supplementation favorably affected gains during the summer months, the response was not apparent during the cooler weather. Significant differences in ruminal pH and also the vitamin A content of the liver were observed, but these effects were not significantly correlated with gains or

feed efficiency. In all trials the cattle were self fed and no difficulties with bloat, scour, or founder were encountered. The findings relating to gains on low-roughage diet are of particular interest in areas of grain surplus, especially the Corn Belt.

6. Estrual cycle synchronized in beef cows. Synchronization of estrus in beef cows, or timing of heat periods, through use of hormones has previously been accomplished with pregestosterone treatments but fertility at the synchronized heat has often been low. A procedure still in the experimental stage combining progesterone and small amounts of estrogen has resulted in both synchronization and normal fertility. Synchronized estrus would make artificial insemination more practical for large beef herds.
7. Breeding value of superior rams demonstrated by research. At the Fort Wingate, New Mexico station, the use of superior rams in breeding typical ewes from the Navajo Indian Reservation has nearly doubled in only two generations the production of grease wool, increased clean fleece weights as much as a third, and increased staple length as much as 40 percent. Use of rams through three or four generations also resulted in 10 to 25 percent increases in weaning weights of lambs.
8. Basis for blood typing of sheep established through basic research. Following the success in blood typing of cattle as a means of improvement and identification of cattle in herds where artificial insemination is practiced, similar studies have been initiated with sheep. Cooperative research with the California Station has aided in the recognition of seven blood group systems in sheep and in the preparation of reagents to test for the various blood types. Studies are being extended to provide information on relationship of certain blood antigens to production traits and on the effects of inbreeding on the nature of blood types.
9. Mink losses prevented by feeding antioxidant with high fish diet. The use of fish waste and byproducts of fish canneries and cold storage plants in the diets of mink usually has resulted in the appearance of yellow fat disease. An antioxidant, BHT--fed throughout the entire breeding and pelting seasons of the past five years at Petersburg, Alaska--has prevented yellow fat disease in all animals receiving the BHT, in contrast to the high incidence of the disease obtained when pink salmon waste and red salmon waste were fed without the antioxidant. Breeding and the production of animals were considered to be excellent and the antioxidant had no harmful effect on litter size, kit weight, or fur quality.
10. Research on meat-type hog progress. Selection in opposite directions for backfat thickness in live hogs has caused lines in both the Duroc and Yorkshire breeds to diverge with respect to leanness and carcass desirability. This selection experiment indicates that genetic changes can be achieved through mass selection which will lead to the economical production of meat type hogs with conventional rations

fed free choice. Selection for high- and low-fatness has been carried through 7 generations in Duroc swine and through 5 generations in Yorkshire swine. Fatness is measured by probing each pig for backfat thickness at a live weight of about 175 pounds.

Along with the changes in backfat thickness which in the Duroc high- and low-fat lines now averages 2.01 and 1.22 inches respectively, there have been some rather marked changes in other respects. Low-fat Duroc pigs have tended to be heavier at both weaning and 140 days than high-fat Durocs. In addition, feed requirements per 100 pounds of gain from weaning to 140 days averaged 33 pounds lower for 7th generation low-fat Durocs than for high-fat Durocs. Also in the Durocs, hams from low-fat pigs averaged 2.3 pounds more lean and 0.8 pounds less fat than the line selected for high-fat. Differences between 5th generation high- and low-fat Yorkshires are somewhat smaller than those between the Duroc lines.

11. Swine benefit from relief of environmental stress. Before a ventilation system was installed in a conventional swine barn, seasonal differences in animals occurred between summer feeding and winter feeding trials. Both trials used identical diets and good quality swine. Daily gains from weaning to approximately 225 pounds averaged between 1.40 and 1.55 pounds for summer trials previous to ventilation, and approximately 1.60 to 1.75 pounds for both winter trials and summer trials conducted since ventilation was installed.

An ordinary one-room air conditioner mounted on a wheeled frame with flexible ducts for discharging cool air at the head of sows confined to farrowing stalls has reduced the stress which develops from the combination of restricted movement, labor pains and excessive heat and humidity. Sows in labor showed marked decreases in respiration rate from use of the cold air duct. Use of this device has completely prevented sow mortalities from heat exhaustion at farrowing.

12. Atlas of Avian Hematology aids leukosis research. Publication of The Atlas of Avian Hematology has made available to poultrymen, veterinarians, and research workers an important new tool for study and diagnosis of abnormal blood-cell conditions in chickens, especially the cancer-like disease known as avian leukosis. The Atlas was produced by Department scientists at East Lansing, Michigan. It is essentially a dictionary, which describes by means of carefully drawn color illustrations the various normal and abnormal types of cells in the blood of birds of different ages from the embryonic stage to maturity. During the past few months many reviews highly commending this book have appeared in scientific journals in this country and abroad.
13. Gene-environment interactions contribute to variation in performance of broiler stocks. Cooperative research in the Southern Regional Poultry Breeding Project, Athens, Georgia, has demonstrated that interactions between (1) rearing location, (2) source of stock, (3) sex and (4) trial or test are the main factors affecting the performance of chicken meat production stocks.

Three trials, each consisting of ten stocks, were conducted at eight State experiment stations where individual body weights were recorded at 2, 4, 6, and 8 weeks of age. An analysis of variance based on means for all main effects (location, source, sex, and trial) at these ages indicates highly significant statistical differences. This is also true for all two-way interactions except in the case of source x sex which was not significant at 2 weeks. All three-way interactions were not significant, except for location x sex x trial at 2 weeks, and location x source x trial at 2, 4, 6, and 8 weeks which were statistically significant.

14. New treatments developed for trichomoniasis and vibriosis of cattle. The organism, Trichomonas foetus, which causes infectious trichomoniasis, was not found in repeated microscopic and cultural examinations of preputial washings from two infected bulls when dimetridazole (1, 2-dimethyl-5-nitroimidazole) was administered orally to them for five consecutive days. One bull was trichomonad-free for two months and the other for six months prior to slaughter.

In a test for vibriosis, 9 bulls were treated 3 times with 1% Furoxone ointment plus 1% Furaladone solution applied locally at 48-72 hour intervals. Six weeks after treatment 7 of the bulls tested were found to be free of Vibrio foetus.

15. The relationship of feed consumption, feed conversion and parasitism studied. In tests, calves were fed at two levels of consumption of the same feed to determine the relation of feed consumption, feed conversion and infection with gastrointestinal nematode parasites. At the lower feed levels they were slightly more susceptible to the parasites than comparable calves on the higher level of consumption of the same feed. Infected calves on each level of feeding utilized the feed less efficiently than uninfected controls on the comparable level of consumption.
16. Lambs and kids can develop immunity after recovery from lungworm infection. Lambs and kids that had recovered from infections with the thread lungworm, Dictyocaulus filaria, which had been administered 9 to 15 months previously, were found to be immune to challenge doses of 7,500 to 60,000 infective larvae of this parasite. Unexposed animals died or developed severe lungworm disease when exposed to the same larval dosages. Although larvae in the developmental stage were recovered from the lungs of "immune" animals 8 to 12 days after infection, no worms were found in animals killed 30 or more days post infection. This finding has disclosed another host-parasite system that may be useful in future studies on the development of immunity in animals to worms.
17. New treatment developed for stomach and intestinal worms in sheep. Thiabendazole, a new anthelmintic for livestock, appeared to be unusually effective against most of the common stomach and intestinal worms of sheep. The efficacy of the treatment was determined from comparative egg and worm counts of principal and control groups of mature ewes with naturally-acquired worm infections.

18. Survival of infestation with psoroptic mange in sheep studied. The need for a better understanding of the nature of the survival of infestations of psoroptic mange in sheep has been emphasized by studies of this problem in 40 head of sheep going through the latent phase of psoroptic scabies which were examined carefully for mites during the summer. Although the body areas known to have had active lesions during the previous winter and early spring were carefully examined, no mites were found. Later with the advent of cooler weather, scabies infestation on these animals became apparent, and 6 weeks after the first symptoms were noted, the flock was 100 percent infested. This shows that latent scabies infestation in sheep can go undetected during the hot summer months.
19. Crystal violet hog cholera vaccine evaluated. Experiments show that two doses of a killed hog cholera vaccine--crystal violet--administered one month apart provide a marked increase in immunity over that induced by a single inoculation. This procedure is under evaluation in Lowndes County, Georgia, on a field trial basis. If found to be satisfactory in field trials, this method would provide an absolutely safe procedure for immunizing swine. The crystal violet vaccine use was developed by the Department some time ago.
20. Killed Newcastle disease vaccine proves efficacious. Cooperative studies on the efficacy of a killed Newcastle disease vaccine conducted under commercial conditions, has resulted in growing out several million broilers completely free of Newcastle disease during their life, a very marked decrease from condemnations from air sac infection and a marked increase in feed conversion efficiency. This vaccine for the control of Newcastle disease was developed by the Department.
21. Research on airsacculitis progresses. Through cooperative research, modification of a rapid diagnostic antigen for field use has been accomplished which now makes it possible to establish turkey flocks free of PPLO (pleuropneumonia-like organisms). This development assures flock owners of a method by which infectious sinusitis and the principle cause of airsacculitis, pleuropneumonia-like organisms, can be eliminated.
22. Methods developed for reducing air sac infection in chickens. Cooperative research has provided for establishment of basic breeder flocks free of PPLO (pleuropneumonia-like organisms) as a source for eggs for growing boilers. When raised under proper sanitary and management practices, broilers from PPLO-free eggs, give maximum yields in feed conversion. There are also minimum condemnations of these birds for air sac infection in slaughter plants. Also dipping broiler hatching eggs infected with PPLO in antibiotic solution has shown that there is a marked reduction in the incidence of air sac infection in such broilers and a resultant decrease in condemnations at slaughter.

23. Data acquired on survival of eggs of poultry parasites in soil. The lengthy survival of parasite eggs is an important factor in the control of infections of cecal worms and intestinal worms in poultry. In studies of survival of these parasitisms, young chickens and turkeys were found to have acquired them after consuming material from both shaded and unshaded plots 22 months after contamination.

In other trials on the control of coccidiosis in chickens and turkeys, shaded soil was more favorable to the survival of the infectious stages, oocysts, than was unshaded soil. Young chickens and turkeys acquired coccidiosis by consuming material from shaded soil plots about 18 months after contamination; on unshaded soil the maximum survival of the coccidia was about 8 months. Knowledge of this type that can be applied to the control of poultry coccidiosis by management is important because some coccidia may develop resistance to drugs used in treatment.

24. Foot-and-mouth disease research. A new and more specific diagnostic method for detecting foot-and-mouth disease antibodies in swine serum has been developed. The complement-fixation test is used routinely for the diagnosis of many diseases, but a property of swine serum, pro-complementary activity, has made it extremely difficult to use in this test. It has been found that pretreatment of swine serum with dilute solutions of formaldehyde completely removed this pro-complementary activity and permitted detection of foot-and-mouth disease antibodies by complement-fixing methods. This finding agrees with previous work with African swine fever. However, in some trials it was observed that complete fixation did not occur unless normal bovine serum was included in the mixture. This is an important finding because outbreaks of foot-and-mouth disease often originate in swine infected by eating virus-containing meat scraps. Any method that helps to improve diagnosis of the disease in swine will be an added safeguard to our livestock industry.

Studies of survival of foot-and-mouth disease virus in beef carcasses infected with foot-and-mouth disease have been continued. Ground meat prepared from an infected steer carcass was stored as unsalted and 4% salted meat at 4°C . for 72 hours. When fluids were expressed from the unsalted meat, the virus was found for as long as 11 days after storage, but could not be detected in salted meat stored for only 4 hours. However, when lymph node fragments were sorted from the ground meat and tested, virus was found in salted meat for as long as 17 days after storage. The titer of the virus in lymph nodes declined during storage, but the virus was detectable as long as 11 days after storage. It appears likely that virus persisted under such conditions for much longer periods.

Cooperative work has been continued in the Netherlands to evaluate the degree of immunity afforded cattle by presently available foot-and-mouth disease vaccines of commercial-type. It was found that the serum from cattle vaccinated 2 or more times with vaccine against types O and A of the virus have remained at a high protective level for more than 2 years. Representative animals from these herds

become available for challenge with virulent foot-and-mouth disease virus periodically. Correlation of serologic and challenge results should provide important information upon which to evaluate vaccines and schedule field vaccinations.

Crops Research

25. Progress made in the development of *Crambe*, a new oilseed. *Crambe abyssinica* is the most promising of the new crops under joint evaluation by crops utilization research. This plant, native to the Mediterranean Sea region, produces a seed oil which contains a high proportion of erucic acid. Utilization research has demonstrated that erucic acid has many potential industrial uses. Crops research has experimentally determined that *Crambe* can be grown either as a winter annual in Texas or as a summer crop in the western wheat-producing States. Field planting and harvesting has been performed with conventional equipment and no serious pests or diseases have been observed to date. Based on relatively conservative trials, seed yields of 1500 pounds per acre, or better, can be expected on favorable growing sites. The prospects for the commercial development of *Crambe* appear excellent.
26. Coumestrol content of alfalfa found to be affected by area of production and stage of growth. Coumestrol is a naturally occurring estrogen in alfalfa. It has physiological effects when fed to cattle similar to those of diethylstilbestrol, a synthetic estrogen used widely in fattening cattle to increase rates of gain and feed efficiency until the Federal Food and Drug Administration recently limited its use. A study of the causes and nature of variation of coumestrol content of alfalfa has been conducted at University Park, Pennsylvania; Raleigh, North Carolina; Lincoln, Nebraska; Manhattan, Kansas; Ames, Iowa; Logan, Utah; and Davis, California, using five alfalfa varieties harvested at the 1/10-bloom stage in each of 2 years (three cuttings per year). At Lincoln and Davis, two varieties were also harvested at six stages of growth ranging from 10 inches high to 25 days after full bloom.

Locations, cuttings, years, and their interactions proved important sources of variation affecting coumestrol content of alfalfa cut at the 1/10-bloom stage. The location effect was large; coumestrol content ranged from an average of about 12 parts per million at Logan and Davis to an average of 126 parts per million at Ames (dry weight basis). Stage of growth was also important. At Lincoln, coumestrol generally increased in quantity with successive stages of growth, reaching the highest level 25 days after full bloom. At Davis, most samples were low.
27. New knowledge developed on soybean nodulation. Research has demonstrated the feasibility of selecting soybean nodulating bacteria especially suited to specific soybean varieties and production areas. By applying inoculum of different strains of bacteria to seed planted

in soil containing nodulating bacteria at about 15 times the normal rate, a significant amount of nodulation (up to 41 percent) by the test strains was obtained, the amount depending on the competitiveness of the strain. Yields from plots receiving some strains were 5 bushels per acre (16 percent) higher than the yields from plots receiving other strains. Consistent but larger strain differences were obtained in a soil that contained no nodulating bacteria.

When inoculum was applied by the usual commercial process to seed planted in soils containing nodulating bacteria, only about 1 percent of the nodules on the test plants was produced by the bacteria applied in the inoculum. Thus, improvement of the nodulation process in soybeans apparently is dependent on (1) a revision of commercial inoculation procedures, (2) the selection of strains of bacteria that are highly competitive with other bacteria in the soil for nodule sites on the soybean roots, and (3) selection of the competitive strains that are the most efficient in the nitrogen-fixation process.

28. New crop varieties and breeding lines developed. Examples of new crop varieties or breeding lines recently released to growers, nurseries, or seedsmen are:

An outstanding sugarcane variety (C.P.52-48), developed at Canal Point, Florida, and selected as a seedling at Houma, Louisiana, was released for sirup production. The new variety compares favorably with the long-time favorite C.P. 29-116 in percentage of juice extracted, Brix, sucrose, clarification, and sirup quality. It is superior in early germination, in development of stands in plant cane and ratoon crops, and in lodging resistance. Early in the season, the long drooping leaves of C.P. 52-48 provide shade that helps control weeds. C.P. 52-48 is not immune to mosaic and red rot, but these diseases have not been important in Georgia.

A black-shank-resistant tobacco variety, Burley 37, with high resistance to wildfire and moderate resistance to black root rot, was jointly released by the Department and the Tennessee Agricultural Experiment Station. Seed was made available to all growers in the 8 burley-producing States in 1961.

The spread and devastating effect of black shank created an urgent need for a resistant replacement for Burley 21, a wildfire-resistant variety, which was planted on more than half of the burley acreage, but is highly susceptible to black shank.

A new safflower breeding line, U-1421, has been released recently by USDA to both private and public breeders. This is the first line resistant to all four known races of safflower rust, and in addition resistant to both high and low temperature strains of root rot. The oil content of U-1421 is equal to or better than the present commercial varieties. While uniformity for agronomic characters has not yet been achieved, the use of U-1421 in a breeding program can

easily lead to safflower varieties with high oil content, resistance to the two most important diseases--rust and root rot--and high seed yield for irrigated production. Safflower production in the United States has increased steadily during the past 10 years. As a result of the recent increase in demand for edible oils high in linoleic acid, it is estimated that safflower production has expanded from 360,000 to 400,000 acres in 1961 to nearly 600,000 acres in 1962.

A synthetic brome grass variety (Alaska B-1) developed in Alaska has proved much more winterhardy than any commercially available varieties. During the severe winter of 1961-62, B-1 survived with almost no injury while varieties such as Manchur, Canadian commercial, and a new Canadian synthetic were almost completely killed. B-1 combines 16 clones which exhibited high general combining ability for yield and hardiness. The potential importance of this synthetic is emphasized by the fact that over 80 percent of the brome grass acreage (seeded to Manchur and Canadian commercial) in Alaska's Matanuska Valley was either completely killed or severely damaged this past winter.

The superior oat variety, Sierra, developed cooperatively by the Department and the California Agricultural Experiment Station, is the result of successful transfer of desirable genes from the wild species *Avena fatua* to cultivated oats. The methods used may have further application in transferring desirable characteristics from wild to cultivated species. The new variety is more shatter and lodging resistant, has larger leaves and stems, denser panicles, and better adaptation to California conditions than varieties previously available.

Two new winter-hardy, high quality, sweet cherries for the Northwest were introduced from the cooperative work between the Department and the Washington Agricultural Experiment Station. Chinook is a dark red cherry ripening earlier than Bing, is more attractive, firmer, and has larger fruit size. Rainier combines large size and firmness in a Napoleon-type cherry. Both Chinook and Rainier have produced good commercial crops during winters that injured other varieties of sweet cherries to the extent that they failed to produce.

A new blackberry named Williams was developed jointly by the Department and the North Carolina Experiment Station for the South. The new berry is resistant to leaf diseases which debilitate standard varieties and at Raleigh produced 5.3 quarts per plant. The new variety matures in midseason, the fruit is glossy, of medium size, firm, and has good dessert quality. It is suitable for both local fresh markets and home use, and should make blackberry production more feasible in the South.

New varieties of muscadine grapes with perfect flowers have been developed, making it unnecessary to grow unproductive male plants for pollination. The fruit of the new varieties is of better quality than that of older varieties. Muscadine grapes are highly prized for their unusual flavor and aroma, both as dooryard fruits and for wine making in the Southeast. High quality bunch grapes cannot be grown in the Southeast because of Pierce's disease.

The highbush blueberry varieties Berkeley, Earliblue and Ivanhoe, introduced by the Department, have proven highly resistant to powdery mildew which in seasons favorable to it can cause moderate to severe losses through debilitation of the plants and direct damage to fruits. Progenies from these new varieties indicate that they are able to beget this quality to their offspring. Powdery mildew resistance can now be added to the qualifications required for introduction of new varieties.

Hybrid spinach, developed through the use of principles worked out by the Department, is now a commercially grown crop. In 1961 hybrid spinach represented about 30% of the nearly \$16 million (farm value) spinach crop. Only the buildup of seed-stocks limits even greater use of the new hybrids. The spinach hybrids yield from 20 to 50% more than conventional open-pollinated varieties of spinach. In addition they are more uniform, possess greater disease resistance, and have equal or higher quality than the older types. Hybrid spinach seed production has been further advanced through use of the newly developed principle of sex reversal, whereby entire populations can be produced that are 100% females. Earlier hybrids were based on strictly dioecious stocks from the seed parent of which all male plants were manually removed as they appeared. Hybrid seed is harvested from the female plants after pollination with a chosen pollen-producing inbred parent.

29. Plant introductions contribute to new vegetable varieties. Recent screening and evaluation of vegetable introductions under the four Federal-State regional projects for new crops has culminated in the discovery and use of plant introductions containing outstanding plant characters, and is a significant accomplishment of the regional approach to plant introduction research. The use of this germ plasm by breeders resulted in the development of 'Spartan Dawn', a pickling cucumber; mildew and anthracnose resistant 'Polaris' and 'Pixie' cucumbers; downy mildew resistant 'Calmar' lettuce; cork and wilt resistant 'Nugget' sweetpotato; mildew, virus, and mold resistant 'Dixie Market', 'Califlay', and 'Early Hybrid 7, 10, 424, and 425' spinaches; wilt resistant 'Kopick', 'Tomboy', 'Indian River', 'Epoch', 'Glecano', and 'Floralou' tomatoes; and virus resistant 'Perfect Freezer 60', 'Thomas Laxton 60', and 'Surprise 60' pea varieties. The maintenance and/or improvement of our vegetable industry is to a considerable extent dependent on this continuous program of plant introduction and evaluation of this world collection of vegetable species and varieties.

Five new azaleas were released to nurseymen by the Department. These azaleas - 'Bayou', 'Green Mist', 'Petite', 'Pink Ice', and 'Whitehouse' - were developed at the Glenn Dale Plant Introduction Station from crosses between the hardy Glenn Dale azaleas and greenhouse varieties, and resulted in a series of attractive pastel-colored types.

A new ornamental, a sweet basil, called 'Dark Opal', was developed at the Connecticut Agricultural Experiment Station through selection from P.I. 182246, introduced from Turkey. 'Dark Opal' was one of four new flowers to receive the 1962 All-American Selections awards. Notable for its uniform dark-purple foliage and handsome habit, this variety is the first sweet basil to have been selected for an award.

30. Pigment found which controls flowering in plants. Plant scientists conducting basic research have discovered that plant flowering, seed germination, and other phenomena of growth and development are regulated by phytochrome, a blue pigment that occurs in very low concentrations in plants. Further, phytochrome has been found to occur in two forms which are interconverted, an active form which is produced by far-red light and is unstable, and an inactive form which absorbs red light and is stable. The active form reverts in darkness to the inactive, stable form. The duration of far-red lighting needed to inhibit flowering of short day plants varies with species. In soybeans enough active form of the pigment is produced by a minute of lighting during the night to last throughout the dark period. In chrysanthemums longer or more frequent periods of lighting are required. Determination of the minimum amount of lighting to inhibit flowering throughout the succeeding dark period has enabled commercial florists to reduce materially their electric power costs to control flowering of chrysanthemums.
31. Domestic Bartlett pear seedlings used as rootstocks found resistant to pear decline. Pear decline, a disorder of pears which kills all varieties of pear trees growing on Oriental rootstocks, has caused and is still causing death to thousands of trees on the Pacific Coast. Conservative estimates indicate that upwards of 50 percent of the nation's pear supply will be lost. Although the cause of pear decline has not yet been determined, research results indicate that where domestic Bartlett seedlings are used as rootstocks, trees can be grown that are not affected by pear decline, even though surrounded by the disorder.
32. New herbicide controls barnyardgrass in rice. Barnyardgrass and other annual weed grasses cost American rice farmers about \$25 million per year. Research at Stuttgart, Arkansas, has demonstrated that 3,4-dichloropropionanilide [DPA] applied post-emergence selectively kills barnyardgrass and other annual weed grasses in rice. Investigations indicate that rice is very tolerant to DPA and that barnyardgrass is very susceptible. DPA at 3 pounds per acre kills barnyardgrass and the herbicide at 12 to 16 pounds per acre does not injure rice. This new herbicide coupled with good cultural management may eliminate the barnyardgrass problem on more than 1.5 million acres of rice in the United States.
33. Snails weed waterways. A large, fresh-water snail that Miami, Florida aquarium owners once marketed but got rid of because of its taste for expensive aquarium plants, may prove valuable based on its appetite. Last year the snail, Marisa Cornuarietis L., which in the United States is now found only in the Miami area, was tested as a control of several

aquatic weeds that impede Southeastern waterways. The snail made a clean sweep of four such weeds - coontail, southern naiad, Illinois pondweed, and salvinia. It inhibited growth and flowering of waterhyacinth and partially controlled alligator weed, which are among the worst aquatic weeds in the United States. Its use to control weeds in rice is being tested; limited tests indicate that germinating rice seeds and younger transplants will not survive but that older transplants and 3 and 4 week old rice plants suffered very little damage.

34. USDA peach varieties dominate Georgia market. According to the 1961 Georgia Peach Marketing Order Report, 6521 cars of peaches were shipped from the State in 1961. Of this total shipment, 5190 cars or 80 percent were of varieties developed by the Department. The USDA varieties Coronet, Keystone, Redcap, Southland, Hiland, Dixired, Cardinal, Maygold, and Dixigem, given in the order of their importance, have been released since 1944. These are all yellow-fleshed, freestone or semi-freestone types of superior quality which are replacing the white-fleshed varieties that lacked firmness at maturity, hence were picked immature. New plantings indicate an even increasing trend toward the new USDA varieties. The varieties were all developed through research activities at Beltsville, Md., and the U. S. Horticultural Station at Fort Valley, Georgia.
35. New citrus rootstocks resistant to the burrowing nematode. Seedlings of 8 citrus species have shown tolerance to the burrowing nematode. The tolerance is of two kinds: (1) near immunity to invasion by the nematodes and (2) endurance of moderate invasion of the roots without reduction of growth. The burrowing nematode which causes spreading decline of citrus in Florida now infests over 10,000 acres and continues to spread. No practical means of ridding soil of the pest, once infected, is known. Therefore, the finding of tolerant rootstocks is of utmost importance and is the only means for reestablishment of citrus on infested land.
36. Crested wheatgrass responds to management. Crested wheatgrass, seeded on about 10 million acres of arid rangeland in the Northern Great Plains and Intermountain Region, is primarily valuable for early season grazing. If not rather heavily grazed, the plants proceed to produce spikes and drop their leaves, meanwhile declining rapidly in both palatability and nutritive value. Research at the Squaw Butte Station in southeastern Oregon has shown that fairly close grazing about mid-May will remove the growing point of developing culms. If grazing is discontinued then, except in years of extreme drought, an entirely new crop of primordia will develop. The new crop of primordia produces only vegetative culms which cure in place, retain their leaves, and can be grazed at any time later in the season. This knowledge makes possible some welcome flexibility in the management of crested wheatgrass and should greatly enhance the usefulness of this species throughout the arid West.
37. A new family of protectant fungicides found. Phenacridane chloride (9-p-hexyloxphenyl-10-methylacridinium chloride) has been found to be very effective in protecting lima beans from downy mildew. This

compound and several others of the same type have value for the prevention of downy mildew of lima beans and possibly other crops. Under greenhouse conditions only about 50 parts per million spray-application is required for essentially complete protection of lima beans. This chemical and its relatives are of interest since only very minute amounts are required for disease control, a characteristic of importance from the standpoint of residues.

38. Progress made in control of destructive peanut disease. Progress has been made in determining the cause of and control for a highly destructive soil-borne pod rot disease of peanuts of undetermined origin, which has caused serious losses to growers in Virginia and North Carolina during the past few years. The disease, which is unpredictable in its occurrence and erratic in its behavior, seems more prevalent and destructive on peanuts on the heavier, more productive soils but occurs also on light, sandy soils. The disease is so destructive in some fields that the crop is not worth digging. In many other fields both yield and market quality of the pods are sharply reduced.

Results of an intensive study at Holland, Virginia, indicate that the organism causing pod rot is a phycomycete. Dexon (p-dimethyl-aminobenzene-diazo sodium sulfonate) sharply reduced the incidence and severity of pod rot under field conditions where 20-25 percent of pods of untreated plots were affected, while increasing yield (by 37 percent) and market quality of pods. This is the first important step forward in the determination of the cause and developing a control for pod rot of peanuts.

39. Nematode control in cotton by seed treatment developed. The simplest and most economical method of using soil nematocides has been developed in tests in Arizona. This involves the application of the nematocide 1,2-dibromo-3-chloropropane by absorbing it on an inert dust and adding a sticker to increase adherence to cotton seed. In this way, the nematocide is placed where it is most effective, giving control of root-knot nematodes during early stages of growth with the use of less than one quart of the nematocide per acre. At this rate, there was a slight effect on germination, but no stunting after several weeks.
40. National Seed Storage Laboratory preserves crop germ plasm for the future. The National Seed Storage Laboratory, Fort Collins, Colorado is building up the finest assemblage of crop breeding stock germ plasm for future scientists. During the past year, more than 17,000 accessions of important breeding lines, new and old varieties, and outstanding introductions moved into the storage vaults where they are maintained under optimum temperature and humidity for long-term preservation. The first catalogs of material in storage have been made available to plant breeders.

41. U. S. National Arboretum. Construction of the Headquarters-Laboratory building, the last major facility of the Arboretum development program is in final stages of completion. It is expected that the building will be completed about April 1963.

Development operations on the Arboretum grounds have included the grading and preparation of new planting sites for additional crab-apples, tree peonies, rhododendrons, viburnums, and firethorns, and the establishment of three new nursery sites. Grading, ground preparation, and planting was also accomplished in the vicinity of the new Bladensburg and "R" Street gates which were recently installed.

New plant accessions totaling 2,037 have included the following notable additions: 172 large-sized rhododendrons in 118 species and varieties received as a gift; 564 viburnums from the Cornell University research collections; many hollies and camellias resulting from the Japanese explorations by the Department; blight-resistant American chestnuts from Department breeding programs; and 400 ginkgo plants of newly developed strains believed to be more acceptable for general planting use. A site is being prepared for planting a conifer collection valued at over \$250,000 which is being donated by an individual.

During April and May 1962, the Arboretum was visited by approximately 55,000 persons. Guide service was provided for pre-scheduled tours by 48 amateur, professional, and school groups.

Entomology Research

42. Sex attractants demonstrated in several insects. Encouraging progress has been made in the search for natural sex attractants in insects that might be useful to determine the presence of or to aid in controlling important insect pests. Extracts of the attractants prepared from male and female insects of a number of species have been tested. The presence of attractants for the males has been demonstrated in adult, virgin females of the tobacco hornworm, southern armyworm, salt marsh caterpillar, pink bollworm, and hessian fly. Research to isolate and identify these attractants is under way in the hope they will prove to be useful tools in helping reduce or avoid residue and other hazards involved in the use of insecticides now required to control these important insect pests.

The pink bollworm sex lure is contained in the tip of the female abdomen and can be extracted with a methylene chloride solvent. Pink bollworm moths can now be mass reared on synthetic food for research use so that it will be possible to produce the sex lure in sufficient quantity for chemical identification. As has already been done for the gypsy moth, the objective is to synthesize the lure and make it available in sufficient quantity for pink bollworm detection and control. Since the pink bollworm is inconspicuous and not easily detected until late in the season when the damaged bolls partially open, a good method for detecting infestations is urgently needed.

43. Progress made in studies of chemicals which cause sterility in insects. Over 50 compounds have been found that are active as sterilants for the males, females, or both sexes of insects. The active compounds have been obtained from various sources including the Cancer Institute of the National Institutes of Health, university laboratories, pharmaceutical manufacturers, or Department chemists. In laboratory studies sterility has been chemically induced in the following 18 species of insects: stable fly, house fly, screwworm fly, Mexican fruit fly, melon fly, oriental fruit fly, drosophila, Mediterranean fruit fly, green peach aphid, boll weevil, pink bollworm, plum curculio, Mexican bean beetle, citrus red mite, two-spotted spider mite, the yellow-fever mosquito, the common malaria mosquito and the pest mosquito, Culex tarsalis. There appears to be a definite correlation between antitumor activity and insect sterilizing properties.

Dipping of Mexican fruit fly pupae in a 5 percent solution of the chemosterilant, tepa, indicates that this material may provide an effective substitute for radiation in efforts to control this insect by the sterilization method. The possible practical importance of this discovery was revealed in an experiment in Mexico in which 1,572,000 chemically sterilized Mexican fruit flies were released in a semi-isolated 10-acre mango grove with severe infestation. A ratio of about 14 sterile males to each fertile female was maintained until mango harvest was practically complete. Infestations averaged about 7 fruit fly larvae per pound of fruit in the release grove compared with 90 larvae per pound in two untreated groves. The possibility of using chemosterilants instead of radiation to achieve sterility is of special interest and importance since a costly cobalt 60 facility is not required to achieve sterility by irradiation.

44. Progress made in establishing alfalfa weevil parasites in Eastern United States. Significant recoveries of two promising alfalfa weevil parasites introduced from Europe were made in 1962 at points in New Jersey where they had been released previously. An average of 7 parasites of one species develop within a single alfalfa weevil larva. The other species is a solitary parasite of weevil adults. Both species may become important factors in helping to reduce destructive alfalfa weevil populations in this country. Another parasite of the larva, which has aided in the control of the alfalfa weevil in Western States for almost 50 years, was recovered in 1962 in North Carolina, Virginia, West Virginia, and Pennsylvania at nine of the eleven sites where it was released in 1961. Previous attempts to establish this parasite in the East had been unsuccessful. Additional releases of this parasite were made in Georgia, Tennessee, West Virginia, Ohio, Pennsylvania, Massachusetts and Maryland in 1962.

45. Parasites for control of puncture vine established on small scale in West. Puncture vine has become a weed of major importance in California and other Western States. It is very drought resistant and its spiny burrs are a serious nuisance when entangled in sheep's wool or when crops are infested that are harvested by hand picking. In 1961 an introduced seed weevil and a stem weevil that attack this weed were

colonized in several Western States. They began to feed and reproduce but since they are native to southern France and Italy, there was some concern as to whether they could survive the winter in this country. Recoveries of the seed weevil in California, Arizona, and Washington and the stem weevil in California and Arizona in the spring of 1962 indicate successful establishment of both species.

46. Method developed for safe importation of bee breeding stock. No bee breeding stock has been imported into the United States during the past 25 years because of restrictions on the importation of adult honey bees in order to prevent the introduction of acarine disease. This disease is caused by a tiny mite (*Acarapis woodi*) which infests the trachea of the adult bee. It is not known to be established in the United States. An experiment in importing immature stages of bees has been carried out in an effort to obtain bee breeding stock without endangering the bee industry. Breeding stock of 3 lines was brought from the Rothamsted Experiment Station, England to the Department's bee research laboratory at Baton Rouge, Louisiana in a battery heated incubator. Eggs, larvae, and queen pupae (female) and drone pupae and semen (male) were transported without the inclusion of honeycombs or adult bees. This experiment proved successful when adult queens and drones were reared to maturity and mated. Progeny resulting from artificial insemination of all 3 stocks were made available to the Department's bee research laboratory at Madison, Wisconsin, and to the Ontario Agricultural College, Canada for further study.
47. Boll weevil arrestant, or feeding stimulant, discovered. The boll weevil is almost completely dependent on cotton for food and reproduction. The nutritional requirements now have been determined so that the boll weevil can be reared on synthetic food but scientists have not yet found what attracts the insect to the cotton plant. However, in a water extract of the cotton plant, they have found a substance that causes weevils to stop or stimulates them to feed. It occurs in all parts of the plant but the concentration is greatest in the fruiting forms, especially the squares. The substance was extracted by soaking the plant parts in water but not with organic solvents. Boll weevils readily feed on bean seedlings, green beans or even cork stoppers when treated with the water extract. They refused to feed on squares that were extracted with organic solvents. Research is underway to isolate, identify and possibly make the substance synthetically. It may ultimately be used as a weapon to aid in control of the boll weevil, the most destructive cotton pest in this country.
48. Research findings aid Japanese beetle control program. A newly developed bioassay method helps determine the need for retreatment of plant nurseries to prevent spread of the Japanese beetle. Before a quarantine certificate for movement of plants can be issued, beds and plots in commercial nurseries in the area infested by the beetle must be treated with chlorinated organic insecticides. When toxicity

to the beetle larvae of insecticides in the soil declines below a certain level, additional insecticide must be added. Use of the beetle larvae to determine when additional insecticide was needed has been unsatisfactory because their availability has been limited by seasonal factors. A new technique employing adult Drosophila (vinegar flies) has greatly increased the number of soil samples that can be assayed each year for toxicity to Japanese beetle larvae since Drosophila can be reared economically in required numbers throughout the year.

49. Methods developed for reestablishment of wild pollinating bees. Wild bees, of great value as pollinators of several important crops have become practically eliminated from many important agricultural areas and it is desirable to find means to reestablish them. As a result of several years' research to determine the feasibility of increasing wild bee populations, alkali bees were successfully transferred to newly prepared nesting sites. The immature stages were removed from old nesting sites, examined to eliminate those that were diseased or parasitized, then placed in holes in wooden blocks. The blocks were covered with beeswax and buried in the new nesting sites. On emergence the adults built nests in the new sites.

Soda straws were found to be suitable nesting sites for the leaf cutting bee (Megachile rotundata). The females build up to 17 cells in one soda straw. Bundles of straws containing these cells can be successfully transferred to any desirable location to increase the local wild bee populations. Several seed growers in the Western States are attempting to make practical use of these procedures for reestablishing the wild bees to help pollinate their crops.

50. Progress in research on the vector of bovine anaplasmosis. Cooperative research by entomologists and veterinarians has produced new concepts on the role of insects and ticks in the transmission of anaplasmosis, a disease which costs the nation's cattle industry more than \$50 million annually. Recent studies have shown that the anaplasma organism is capable of surviving at least six months in hibernating unmated male Dermacentor andersoni ticks. Mated male ticks failed to survive under hibernation conditions. These findings suggest that male ticks may be more important than females in the transmission of the disease and provide a partial explanation of how the disease survives overwinter in nature. For the first time, structures believed to be the projection part of the anaplasma organism have been demonstrated in the gut and feces smears of the tick by fluorescent antibody and electron microscopy techniques. Further perfection of these techniques may enable researchers to solve the secret of the organisms' survival and possible cycle of development in the tick.

Soil and Water Conservation Research

51. Water harvest method developed. Low-cost treatments for stabilizing and waterproofing soil surfaces have been developed at the U. S. Water Conservation Laboratory at Tempe, Arizona. These treatments are designed to increase precipitation runoff for stock-water and farmstead supplies. The treatments, consisting of an asphalt emulsion soil stabilizer and a chemical water repellent with or without plastic membranes, promise to produce water in 10-inch rainfall areas at a cost near 40 cents per 1,000 gallons. Costs are generally less with greater rainfall. Successful field tests have been made of water-storage bags consisting of butyl-coated nylon and vinyl-coated nylon and of cistern type storage units. Water collected and stored in these containers sustained no contamination or loss through a summer season.

The successful, low-cost treatment of the watershed collection area coupled with satisfactory storage facilities indicates that a solution to the problem of providing nominal quantities of stock and domestic water in remote areas can be achieved. This is of particular importance to ranchers on many rangeland areas who need a dependable and economic source of livestock water that can be strategically located on their grazing lands.

Cooperative field testing of these findings is now underway with the Salt River Project in Arizona, the Bureau of Indian Affairs and the Forest Service.

52. Tillage guide developed for the Corn Belt being tested. Managing soil and water and providing the proper soil environment for the plant seedling are becoming more important objectives of tillage than is weed control. At Ames, Iowa, rapid progress is being made in preparing a "tillage guide" for corn for the major soil types in the western Corn Belt. The guide provides for the first time a means for the evaluation of soil characteristics as they exist and the changes brought about by tillage operations. The guide has divided a field planted to row crop into two zones. These zones are the soil immediately around the seed and seedling roots and the soil between the row. Measurements made with a microrelief meter, developed to evaluate surface roughness between the rows, show that reduced tillage systems, such as wheel-track planting and listing, have twice as great a potential water detention as conventional tillage. After field testing, this guide should provide the information needed for technicians to set up tillage methods for various cropping systems and soils that will give the maximum protection to our soil and water resources.
53. New concept of nutrient balance in fertilizer application developed. Current trends for the use of higher rates of fertilizer in crop production now require new concepts of nutrient balance and absorption in relation to crop yields. At Beltsville, Maryland, the interrelations between the positive and negative charged substances (plant nutrients)

absorbed from soils have been reexamined. Under conditions where high amounts of fertilizer are applied, substantial evidence has been accumulated that the main function of some nutrients is to supply positive charges. These positive-charged nutrients enable the plant to maintain the pH and organic acid content within a narrow range which is a prerequisite for good growth. With this newly acquired knowledge, it is anticipated that substantial changes in fertilizer mixtures available to the farmer can be expected in the future.

54. Subsoil acidity influences the rooting depth of crops. Shallow root development causes plants growing on many soils to suffer from drouth damage even though the subsoil contains adequate moisture. Subsoil acidity is thought to be one of the main causes of this limited root development. In studies conducted at Auburn, Alabama, it was found that soybean roots develop and absorb moisture from subsoils with extremely low pH values and high levels of exchangeable aluminum, provided the surface soil received fertilizer and lime. Cotton roots were considerably more sensitive than soybeans to subsoil acidity. Sudangrass roots were even less tolerant, exhibiting the coral-like appearance which is associated with aluminum toxicity. From these data it appears that soybeans will develop normal root systems on soils with acid subsoils, but cotton and sudangrass will have shallow root systems unless a source of calcium is supplied to the subsoil. This information will aid in developing liming schemes that will assure maximum root development of most crops growing on acid soils.
55. New rainfall patterns discovered for rangeland watersheds in the Northwest. The raingage network of approximately one recording rain-gage per square mile on the 93.5 square-mile Reynolds Creek watershed southwest of Boise, Idaho, has provided startling new information on rainfall patterns on rangeland watersheds in that area. Records from the few previously existing gages in the region indicate that storms of 1-hour duration in the Reynolds Creek area with rainfall of 0.50 to 1.00 inch are normally to be expected only once in 100 years. The new network has shown three storms on the watershed in the last two years that exceeded this and 10 storms which exceeded 30-minutes in duration with rainfall of 0.50 to 0.75 inch. Intensities reached values up to 7.0 inches per hour for short bursts of time up to 10-20 minutes. Storm cells are commonly 2-5 square miles in area. Information on rainfall characteristics, such as cited here, is of great value to the design engineer as an index to the probable occurrence of flood events in small watersheds which are, as yet, but poorly documented in the region. The findings will be used by the Soil Conservation Service, Bureau of Reclamation, Corps of Engineers, Irrigation Districts, Highway Departments, and others.
56. Wind erosion prediction equation developed. At Manhattan, Kansas, an important milestone in research on wind erosion has been reached with completion of a simplified wind erosion equation which, when applied to any field anywhere, will tell whether or not the field is sufficiently protected from wind erosion. Moreover, the equation can be used as a

tool to estimate what field conditions a farmer should establish to reduce wind erosion to an insignificant amount.

The equation's usefulness lies in its simplicity. First, the condition of each of the five major factors that influence wind erosion is determined for the field by specified procedures. These factors are: Percent soil fractions larger than 0.84 millimeters in diameter as determined by standard dry sieving; local climatic factor based on average wind velocity and moisture of soil surface; soil surface roughness based on surface clods and ridges; equivalent field width along prevailing wind direction; and equivalent quantity and orientation of vegetation. With numerical values of these factors the potential amount of wind erosion of the field is read from accompanying charts and tables.

The equation is a potent new tool that is expected to aid technicians and agricultural leaders in field application of soil conservation principles and in education work. The area of application is primarily the vast dryland farming areas of the High Plains. Other areas of application are the dryland and irrigation farms of the West and some intensively cropped sandy soils of the humid region.

57. Precise measurement of silt density accomplished. An instrument that gives a precise measurement of the density of silt in a reservoir has been perfected at the Sedimentation Laboratory, Oxford, Mississippi. This has been previously reported as an instrument that was under development -- it is now a fully operative piece of equipment ready for widespread field use.

Measurements of depths or thicknesses of silt are relatively simple with traditional methods, but the necessary measurements of densities, or weights per cubic foot, have long been a laborious problem, sometimes almost impossible of solution. Measurements of silt density are necessary both to forecast the useful life of reservoir storage and to relate the silting problem back to the source of the silt in the watershed. The new instrument, assembled from an assortment of standard component parts plus some new ideas of research workers, operates on the principle of radiation from a radium isotope. It will be especially useful in making precise and rapid assessments of the silting problems of small reservoirs, such as are constructed under the authority of Public Law 566.

58. Sod-based rotations essential for erosion control on Piedmont farms. Runoff and soil loss data at Watkinsville, Georgia, show there is little hazard from erosion on sloping land, even under very severe rainfall conditions, when row crops follow sod crops on the land. Rainfall in 1961 was 33 percent above normal and the rainfall erosion index was 200 percent of the 22-year average. Actual rainfall runoff

and soil losses on contour farmed Cecil sandy loam soil of 7 percent slope 70 feet long were:

<u>Cropping treatment</u>	<u>Rainfall inches</u>	<u>Runoff inches</u>	<u>Soil loss Tons/acre</u>
Cotton continuously	63.7	21.0	28.1
4-year rotation of fescue, fescue, corn, and cotton	62.1	7.2	4.2
3-year rotation of fescue, fescue, and corn	62.1	2.5	0.6

Soil losses for the 3-year rotation with corn one year in three were only 2 percent of that with cotton grown continuously, and for the 4-year rotation with two years of row crops in four were only 15 percent. With the 3-year rotation only 4 percent of the annual rainfall left the field as surface runoff, but with continuously grown cotton 33 percent of the rainfall left the fields loaded with soil to muddy the streams of the area. Yields of the row crops were much higher in the rotations than when grown continuously.

These findings indicate sod-based rotations are essential for row crop production on the sloping Piedmont soils that extend from Maryland through North Carolina, South Carolina, Georgia and into Alabama.

59. Ground water recharge aided by reservoirs. Instrumentation has been partially established on the Lowrey Draw watershed in the vicinity of Sonora, Texas, to provide information on the effects of flood-water retarding reservoirs upon ground water recharge in the Edwards Plateau area. Data are available from only a few runoff events; but, in these cases, there has been a marked increase in the level of some ground water observation wells associated with impoundments in the surface reservoirs. Much more data will be necessary to define relationships between surface and ground waters in this cavernous limestone region. However, it is anticipated that the studies will provide information on the sources of ground water in the area and guidelines for ground water recharge in limestone regions by means of watershed protection measures.
60. Relative leaf turgidity of cotton used to determine when to irrigate. The rapid rise in the use of supplemental irrigation in recent years has increased the need for criteria for determining when water should be applied to plants. At Weslaco, Texas, in studies with cotton the use of moisture stress within the plant as an irrigation criteria indicates that the method can very readily be used for determining when to irrigate. Excellent control of timing of irrigation applications was obtained, based on relative turgidity measurements

made on cotton leaves. The time of wilting of the cotton plant was strongly influenced by the amount of moisture in the first foot of soil. However, for any given soil moisture condition, the time of wilting was also associated with the temperature and vapor pressure around the plant. Although this method offers considerable possibilities in determining when to irrigate, additional studies will be required before the principle can be applied to farmers' fields.

61. Method developed for forecasting water supply from snowmelt. In the western mountains, the most important source of irrigation water is from the melting snow pack. An electronic analog has been developed at Moscow, Idaho, for calculating estimates of streamflow from snowmelt on source areas of the Pacific Northwest. The following are involved in the computations: Snow storage and melting related to climatic, topographic, and vegetational character; losses from evapotranspiration varying with climatic factors; rainfall contribution; soil moisture storage; ground water storage and discharge; and observed streamflow. The analog is being used primarily as a research tool for the refinement of forecasting techniques to greatly speed up calculation processes. However, it may have great potential for handling large volumes of snow survey data in connection with water supply forecasts.

Agricultural Engineering Research

62. Sugarcane harvester developed for upright cane. An improved self-propelled sugarcane harvester which can be used on upright cane was operated successfully last season under semi-commercial conditions. The harvester cuts the cane, strips the leaves, and loads it in a wagon attached to the rear of the harvester. The machine has a satisfactory capacity and will furnish fresh, clean cane to the mill thus eliminating some of the sugar loss caused by delays in conventional field operations.
63. Improved injector developed for pneumatic feed conveyor. In cooperative research at the Illinois Experiment Station, a simpler, less expensive feed injector has been developed for the medium pressure feed conveying system previously developed cooperatively. This injector forces feed into an air stream that carries it through a 1-inch pipe to feeding locations around the farmstead, eliminating the need for labor to move or haul feed from storage to feed bunks or automatic feeders.
64. Engineering research developments in cotton production. At Stoneville, Mississippi, an automatic multi-path seed cotton drier has been developed and tested. It controls the exposure time in the drying air stream. This device is actuated by sensitive controls, that automatically expose the damp seed cotton to sufficient drying to obtain good cleaning and ginning results without loss of quality from overdrying.

Mechanical topping has greatly reduced or eliminated lodging of irrigated cotton without reducing yield when not more than six inches of the main stalk were removed. In experiments conducted at Shafter, California, topping to a height of 48 inches gave the best results in these tests considering lodging, yield, and picking efficiency.

65. Mechanical thinning of peaches reduces costs. Preliminary studies of thinning by mechanical shaking indicated a labor cost reduction of \$60 to \$90 per acre over methods now in use. It resulted in satisfactory size and quality fruit. However, inasmuch as there was some reduction in yield, further studies are contemplated in an effort to more accurately control the thinning. It may be possible to extend this practice to other kinds of fruit.
66. Low cost high-utility wall panel for farm building. In cooperative research at Blacksburg, Virginia, a low-cost, high-utility wall panel for farm building use has been developed. Structural tests show it to have ample strength, and erection of a test building shows it to be easily handled, attractive in appearance, easily cleaned and disinfected. The panel is 2' x 8' x 3" and is of sandwich construction, consisting of a 2" thick expanded polystyrene core with $\frac{1}{2}$ " thick cement grout skin surfaced. The grout skins are reinforced with pre-stressed steel mesh, which imparts unusual strength and flexibility characteristics. Joints between panels are sealed with a commercial caulking compound. The in-place cost of these wall panels approximates that of concrete block, but the resulting wall is much stronger, more attractive, has a smooth interior finish and about four times the insulating value.
67. Farm building research developments. At Beltsville, Maryland field trials have been made with roofs fabricated of aluminum, plywood, hardboard, insulation board and thin shell plaster--with weather coating surfaces of polyester and fiberglass reinforced asphalt. It has been shown that such sheet materials can be used without rafters to span roof areas by taking advantage of their shear strength when used in a shape approximating a hyperbolic paraboloid. Loading tests have checked computed stresses with attendant deflections. This development opens the way for appreciable economies in building costs as it permits lighter weight roofs which result in lower material costs for equal strength.
68. Equation developed for predicting transformer and electric service requirements for farmsteads. New farm electric uses, when adopted, frequently require electric wiring and transformers of greater capacity. Considerable progress has been made in the development of a method for estimating the maximum electric demands of farms for purposes of sizing transformers. In this method the demand of a consumer is expressed in equation form using monthly energy use and installed electric equipment as predictors. Data to develop the method have been derived from cooperative studies.

UTILIZATION RESEARCH AND DEVELOPMENT

Current activities: Investigations are conducted in the field of chemistry and related physical and biological sciences to develop industrial chemicals, new and improved foods, feeds, drugs, fabrics, and other products from agricultural commodities. New methods for evaluating the suitability of commodities for processing, and improved processing methods are devised and tested. Ways are sought to increase the use of byproducts. The purpose is to effect maximum, economic utilization of agricultural commodities.

Selected Examples of Recent Progress

1. High-amylose corn starch produced in commercial quantities.
The Department's cooperation with industry on breeding and processing high-amylose corn has been the key factor in the commercial production of high-amylose corn starches, tailor-made especially for a variety of industrial uses. Over three million pounds of this new corn starch containing about 61 percent apparent amylose were produced commercially from the 1961 high-amylose corn crop. Production for 1962 is estimated at five million pounds. Most of this new industrial starch is used as a size in the manufacture of glass fiber products. Further opportunities lie in industrial applications such as textile size, films, fibers, and pulp and paper additives.
2. New polymer made from corn sugar in semi-commercial production.
Three industrial companies have announced the production of a new polysaccharide gum by the bacterial fermentation of corn sugar using a process developed by the Department. The potential market is estimated to be in multimillion pounds. Production of each pound requires two pounds of corn sugar. Known promising uses are in oil-well drilling fluids, fire-fighting solutions, cosmetics, and pharmaceuticals. Uses in foods are under study but await Food and Drug Administration approval; preliminary feeding tests indicate the gum is nontoxic.
3. Basic discovery explains visco-elastic properties of wheat flour dough. The ability of wheat flour bread dough to rise was found to reside in the glutenin component which makes up 50 percent of the gluten protein of flour. The molecules in this component were found to be very large. A simple chemical treatment was found to break glutenin into uniform protein molecules of very much smaller size. Since this derived protein has no visco-elasticity, it follows that glutenin is composed of polymers of small protein molecules held together by specific chemical linkages, and that this polymeric character is necessary for the unique visco-elastic properties of wheat flour. This basic information shows the nature of the gluten molecules in wheat flour which is responsible for its desirable breadbaking properties, and points the way to applied studies directed toward controlling gluten properties for both food and industrial applications.

4. New bulgur process to aid wheat exports. A new, continuous process has been developed for the conversion of wheat into bulgur (parboiled wheat). This process, which operates at atmospheric pressure, is economical in heat and labor requirements and employs conventional, readily-available equipment. A large midwestern grain company is constructing a bulgur plant based on this method, while other companies are converting existing equipment. Present plans of the Department call for the movement of over 300 million pounds of bulgur into school lunch and market-building programs abroad this year.
5. High-stretch cotton fabrics opening new markets for cotton. Three methods have been developed for producing all-cotton knitted and woven fabrics with high recoverable stretch, durable bulk and increased warmth. These developments are viewed by industry as having potential benefits to cotton as great as the original development of a wash-wear cotton fabric. They should enable cotton to obtain a large share of markets that, within the next ten years, are expected to consume textile fibers in quantities equivalent to more than two million bales. Uses include upholstery, slip covers, industrial coated fabrics, bathing suits, dresses, hosiery, underwear, sweaters, sport shirts and many other uses where resilience and related properties are of importance to consumers. In one method, fabrics are treated with a strong solution of caustic soda to impart the desired amount of stretch. In the other two methods cotton yarn is treated to impart high recoverable stretch, one involving a combination of resin and mechanical treatment and the other crimping yarns first made thermoplastic by chemical modification of the cellulose. At least two companies are in commercial production on the caustic treated fabrics, and a number of companies are producing products experimentally by the other two methods.
6. Improved wash-wear finishes for cotton developed. Following the tremendous expansion in the consumption of cotton during the last few years in wash-wear fabrics, cotton is now experiencing increased competition from improved wash-wear fabrics made wholly or in part from synthetic fibers, and the performances of cotton wash-wear fabrics must be further improved if the consumption of cotton is to be maintained or expanded in this 1.5 million bale market.

The Department, in its continuing research to develop new and improved wash-wear finishes, has made many contributions in the area of basic research that have been used by industry to develop finishes that are now in commercial use. In the area of applied research three new types of finishes have recently been developed through the pilot plant stage. One of these involves a new method of employing formaldehyde, which previously had not been technically possible in large-scale processing. This method gives a wash-wear finish that is durable to laundering and not damaged by chlorine bleaches. Another one, based on the use of a chemical called divinyl sulfone, not only gives excellent wash-wear properties, but permits the simultaneous chemical attachment of brilliant dyes. The third finish, using potentially low-cost chemicals called carbamates,

gives excellent, durable wash-wear properties. Several industrial firms are now evaluating these treatments on a larger scale to determine their commercial feasibility.

7. New process for making wool shrink-and-muss-resistant to be commercialized. The number of manufacturers evaluating the method for making wool fabrics shrink-and-muss-resistant recently developed by the Department continues to grow. One of the large wool fabric manufacturers who treated several thousand yards of fabric by this entirely new method and evaluated it in a market survey, is purchasing more suitable processing equipment and will begin large-scale commercial production in early 1963. Because the treatment does not weaken the fibers, make them harsh, or change the original texture of the fabric, as do some of the treatments now in use, potential applications cover a broad range of different kinds of woolen and worsted articles. The name WURLANIZE has been chosen for this new process, WUR coming from Western Utilization Research and Development Division and LAN from lana, the Latin word for wool.
8. Precooked, dehydrated sweetpotato flakes produced commercially. Commercial production of precooked, dehydrated sweetpotato flakes -- a product developed by Department scientists in cooperation with the Quartermaster Food and Container Institute for the Armed Forces -- was initiated by one company during the 1961-62 season. The product is going primarily to institutional markets at the present time. The new product can be reconstituted in 60 seconds and has the color and taste of freshly cooked mashed sweetpotatoes. Consumer acceptance tests of the flakes are in progress. Industry interest in it is high. It is expected that the flakes will open a profitable new market, especially for the substandard (odd sized and shaped) sweetpotatoes which now return little or no income to the farmer, and for the standard grades not absorbed by the demand for fresh, canned, and frozen products.
9. New discovery controls darkening of cut apple products. Studies on the natural enzymes of apples have led to the discovery of a simple inexpensive method for inactivating the surface tissue of cut slices so that enzymatic browning cannot occur. This inactivation involves temporarily modifying the natural acidity on the cut surface tissue. Such modification has no effect on taste and is completely harmless. The effects are permanent since compounds susceptible to darkening are changed enzymatically into natural constituents which do not undergo browning. This discovery promises to overcome the perplexing problem of darkening of cut apples and apple juice. This development will benefit producers, processors, purveyors and the public and will greatly reduce the amount of sulfite now used for this purpose. The amounts of sulfite have been limited by several countries which import large quantities of dehydrated apples.

10. Foam-mat dried foods produced commercially. High quality instant food powders, produced by a new method developed by the Department, promise to substantially expand exports for U. S.-produced fruits, vegetables, and other agricultural products. The method of manufacture, "foam-mat" drying, has now become a commercial reality, with installation of two plant-scale units. A growing number of industry pilot plants attests to the likelihood of its extensive use in the future. The new drying method involves whipping liquid foods into a foam, incorporating suitable stabilizers when necessary; spreading the foam on a belt or perforated tray; drying in a stream of warm air; and finally rolling the dried foam into free-flowing granules which may then be compressed. Enough of the foam structure persists through compression so that instant rehydration is combined with the desired property of high bulk density.

11. Linseed oil for coating concrete under evaluation. The Department is cooperating with the National Flaxseed Processors Association in demonstrating the value of a thin coating of linseed oil for the protection of concrete highways and bridge decks against deterioration by chipping and splitting under freeze-thaw conditions in the presence of salts. Linseed oil seals the surface of the concrete and prevents inward diffusion of water and dissolved salt, which upon freezing exert a disruptive effect. There is an increasing trend toward adoption of this protective treatment on highways. The State of Illinois has recently specified the use of linseed oil for this purpose. Countrywide adoption of this practice would greatly increase the consumption of linseed oil. The potential consumption for the Federal road program is around 35 million pounds of linseed oil per year.

To decrease cost and avoid flammability, current Department research is aimed at development of water emulsions of linseed oil to replace the solvent-thinned oil blend now being used.

12. Linseed oil emulsion paints in commercial production. Over 50 paint manufacturers are making linseed oil emulsion paints using formulations that the Department assisted in developing. Two linseed oil companies are producing oil emulsion bases, and both have acknowledged the Department contributions in their promotional publications. A third company is expected to enter the market shortly. Paint companies combine the emulsion base with pigment dispersions and other necessary ingredients to make the finished paint. The new linseed oil products are superior to synthetic resin paints in many properties including leveling, blister resistance, and adherence to chalky weathered surfaces. If the current consumer acceptance of linseed oil emulsion paints continues, the decline in paint use of linseed oil should be halted and lost markets regained.

13. New mixed solvent process for extraction of cottonseed tested. A new cottonseed extraction process that has potentials for broadening and enlarging the markets for cottonseed meals has been developed by Department scientists. The new process, which employs a mixed solvent

instead of the single solvent used in present processes, gives a meal that is practically free of gossypol and other undesirable components, and also increases oil-extraction efficiency. Progress has been made on a pilot plant scale in solving problems associated with the technical control of the extraction phase of the process, solvent recovery and reconstitution, and recovery and refining of the oil. Adoption of the process for commercial use would result in the production of meals more suitable for feeding to poultry and swine, in addition to the conventional use in feeds for cattle and other ruminant animals.

14. Research modernizes maple sirup industry. Modernization and expansion of the maple sirup industry is being brought about largely as a result of research by the Department. Use of plastic tubing for collecting and transporting sap; establishment of the central evaporator plant made possible by improved methods of collecting, transporting and preserving sap; and introduction of the germicidal pellet for maintaining taphole sterility during the sap flow are among the more important developments of this research that have contributed to improvement in the industry. Introduced in 1962, use of these germicidal pellets has resulted in a one-third increase in production of a higher quality sap in many areas. Current reports show sap farmers realizing \$100 to \$150 per acre with minimum labor requirements and modest capital outlays. These developments provide a means for improving conditions in the maple tree belt and aid in the Rural Areas Development Program.
15. Process developed for obtaining feed meal from mustard seed. A commercially feasible process has been developed for producing from mustard seed a bland feed meal with potential as a protein supplement in livestock feed. When mustard seed is processed in the manner normal with other oilseeds, the meal contains the pungent material that characterizes mustard and has poor animal acceptance as a feed. With the new process the meal does not contain the pungent flavoring material. Co-products are a bland vegetable oil which has potential uses similar to rape, currently imported; and a concentrate containing the pungent factor, for which there is industrial demand. Commercialization of this process should permit growing mustard seed on land currently devoted to surplus crops; decrease imports of rapeseed oil and the essential oil containing the pungent factor; and produce a feed meal in an area where it is urgently needed. Mustard seed is grown mainly in Montana. Its principal use is for condiments. There is demand in Montana and adjoining States for oilseed feed meal from locally grown crops.
16. New spray-drying process for food products. A new method discovered by Department research workers for drying milk, cheese whey, and possibly cheese, eggs, fruit juices and other foods has gone rapidly

into commercial use. It is based on high-pressure gassing with nitrogen or air of the liquid concentrate just before spray drying, which results in more rapid and efficient drying, with attendant economic advantages. Product quality is excellent, and the use of nitrogen provides a means of lowering the oxygen content of unstable food products such as dry whole milk.

17. Progress on dry whole milk. An instant whole milk powder of ready dispersibility and having flavor very close to that of fresh fluid milk appears to be practicable. Research workers in the Department have produced experimental dry whole milk powders that, with special gas-packing, have maintained this quality four to six months at temperatures up to 70° F. Cost estimates indicate a retail price of 16 - 18 cents per quart of reconstituted milk.
18. Methods to prevent meat deterioration during frozen storage developed. Maintenance of the quality of meat during frozen storage is an important problem of the meat industry. A large part of the deterioration that occurs in frozen storage is due to fat decomposition. The Department has shown that enzyme action is a principal factor in causing this decomposition. This discovery indicates why deterioration can occur when actual bacterial growth is inhibited. These enzymes originate from bacteria which may multiply because of poor initial sanitation or during periods of defrosting. By improving initial sanitation and by continuous maintenance of low temperature during storage this source of deterioration can be largely eliminated.
19. New chemical tannage developed. A new tanning process using glutaraldehyde has been developed which produces leather with increased resistance to deterioration from perspiration, chemicals and washing. Four tanners have put this development in commercial use for the production of sheepskin garment leather and shoe upper leathers from cattlehides. Perspiration resistant work shoes are now being manufactured and marketed. At least three other firms are conducting plant tests. Improving the properties of leather through developing this new tannage affords a sound basis for creating new products that will expand markets for animal hides and skins.

NUTRITION AND CONSUMER USE RESEARCH

Current activities: Investigations are conducted on human nutritional requirements, composition and nutritive value of foods, and problems relating to the household preparation and preservation of foods. Studies are made of problems in household utilization of textiles, clothing, and equipment, and of family requirements for housing and related facilities. Investigations are made also of food consumption practices and the nutritive value and economy of customary diets, patterns of rural family expenditures and production for household use, and economic problems of household management.

Selected Examples of Recent Progress

1. Amount and kind of dietary protein and carbohydrate affect deposition of body fat. With levels of dietary protein high enough to support storage of body protein, young rats fed ad libitum on diets containing the same kind and amount of fat tended to eat more and to store more body fat when the dietary carbohydrate was sucrose rather than cornstarch. With protein inadequate in quality or quantity, the body stored fat rather than protein regardless of the nature of the carbohydrate. On high protein diets, the animals tended to have larger kidneys and higher serum cholesterol than on low protein diets.
2. Data on magnesium in human nutrition published. A comprehensive analytical summary of data on magnesium in human nutrition was published during the year for use as reference by researchers in nutrition. This mineral element is now in the spotlight because of its purported relation to fat metabolism in man. The publication brings together scattered data on the magnesium content of various body fluids and tissues, on the metabolic relation of magnesium to other minerals, and on metabolic balance studies on persons of different ages. The data are presented so as to facilitate additions from subsequent research and to stimulate further evaluation as nutrition science progresses.

Conclusions as to human requirements for magnesium, based on these literature analyses, are about 150 mg. daily for children up to 10 years; 200 for preadolescents, and 250-300 for adolescents on protein intakes customary in the USA; about 300 mg. daily of magnesium for young women and 400 mg. for young men on protein intakes of about 70 and 80 grams, respectively. It is estimated that our average USA food supply now provides about 320 mg. of magnesium along with 100 grams of protein per person per day, but better data are needed on the magnesium content of foods in the forms now eaten.

3. Genetic differences affect response to the same diets. Genetic differences have been found to affect ability to utilize the same diets and to withstand the stress of nutrient imbalances. In parallel studies of three strains of rats, fewer differences between strains

were found on a stock diet of mixed feed than on either of two semi-purified diets. Sharpest differences between strains resulted on a semi-purified diet that was imbalanced in several nutrients. Two strains susceptible to kidney damage ate more food than the third strain, gained more weight, excreted more urinary protein, and tended to have larger livers and more liver fat. On the diet imbalanced in nutrients, these two strains stored more liver fat and had much higher liver and serum cholesterol levels than the third. The third strain of rats ate least and gained least in body weight and body fat, but stored the most body protein. This strain also had least kidney damage, and showed least evidence of disordered lipid metabolism.

4. Niacin metabolism of preadolescent girls reported. Analysis of the niacin-tryptophan metabolism of 35 girls 7 to 9 years old on different levels of protein intake, indicates that metabolism of niacin in children does not follow the same pattern as in adults. In children the use of the amino acid tryptophan for growth appears to take priority over its conversion to niacin, whereas in adults, particularly in pellagrous persons, niacin metabolism has been observed to demand priority use of tryptophan for conversion to niacin.
5. Household handling of frozen foods. In studies made under controlled laboratory conditions, frozen-food storage compartments of modern combination refrigerator-freezers were found to maintain the zero temperatures that research has shown to be needed to preserve quality in frozen foods over long periods. However, temperatures in the low-temperature compartments of conventional refrigerators are such as to limit storage to only a few days.

Most city families store frozen foods in the ice cube compartments of conventional refrigerators, according to surveys made in two locations. The median storage temperatures found in these compartments was found to be between 12 and 20 degrees Fahrenheit. Because of the short period of storage generally used--one week or less in about three-fourths of the households--the likelihood that any considerable quality loss occurs in the home is lessened.

6. Data made available for appraising diets. Appraisal of diets requires information on the amounts of nutrients provided by the foods eaten and a comparison of these with the amounts of nutrients recommended for good health. Tables of the composition of foods, such as are prepared by the Department provide the nutritive values to use in these calculations. For use in large-scale dietary studies involving automatic data processing, values from one such table have been entered on punched cards, coded by item number and food group, and instructions prepared for their use. The cards and instructions are for sale at a nominal price. To date almost 100 sets have been bought by institutions, chiefly hospitals or research groups. As an aid to the calculation of the nutritive value of the food issues of institutions, a short-cut method has also been developed using values for groups of foods rather than for individual food items. This method is feasible where less precision is required than for evaluating the diet of an individual person or family.

7. Job-related expenditures of employed wives studied. Many rural as well as urban wives must from time to time decide whether to take a job outside the home to add to the family income. Studies have been made in selected areas of Ohio, North Carolina, and Georgia to determine differences in home management practices of employed and nonemployed wives, and how much the employed wives contributed to the family's income after paying job-related expenses such as income and social security taxes, transportation to and from work, and extra clothing and household help. It was found that about three-fifths of the earnings were left after paying these expenses in the case of wives who were employed at least half-time and whose husbands had full-time jobs. Smaller average net earnings were realized by mothers of preschool children because of the expense of providing care for their children.

This information on job-related expenditures is being used not only in educational programs by Extension workers, adult education teachers, and social workers, but also by public housing authorities in setting standards of eligibility for residence and rental rates for families with employed wives, and by welfare agencies in determining ability of families to pay for health and welfare services.

8. Standards developed on housing space needed for work convenience. To provide technical guidance for developing and evaluating house plans, graphic standards have been published for minimal dimensions of space needed for the efficient performance of more than 20 typical household activities. The standards are based on measurements obtained through cooperative research in Alabama, Illinois, Pennsylvania, and Washington. The new standards will be of special value to many rural dwellers who are moving ahead to take advantage of provisions of the Housing Act of 1961 in replacing or making major repairs in obsolete houses. Families and the architects, designers, lending agencies, and others helping them are concerned that new or remodeled houses be functionally useful and economically planned. Research is continuing to determine housing needs and interpret them in a manner useful to the many private and public groups requesting planning guides.
9. Clothing designs for handicapped contribute to work efficiency and self reliance. Principles of clothing design and construction have been established and applied to the solution of clothing problems encountered by many handicapped homemakers. Garment features that contribute to physical comfort, freedom of movement, safety, convenience, self-reliance, and practicability have been developed. The results of this research are being presented through Government publications, exhibits, and workshops, and are being widely studied and applied by home economists, therapists, nurses, and other professional groups concerned with the needs of the disabled and the aging. Requests are being received for information related to the clothing problems of other groups, such as crippled children and the blind.

CONSTRUCTION OF RESEARCH FACILITIES

The 1963 Agricultural Appropriation Act, approved October 24, 1962, included \$2,780,000 under the appropriation "Salaries and expenses, Agricultural Research Service, research," for the construction of eight research facilities. The funds provided for these facilities remain available until expended. In fiscal years 1961 and 1962, funds for the construction of research facilities were provided under the appropriation, "Construction of Facilities, Agricultural Research Service," but no funds were provided under this appropriation for fiscal year 1963; instead they were provided under the Salaries and expenses appropriation.

The status of the eight research facility items as of December 31, 1962 follows:

<u>Item</u>	<u>Amount Provided</u>	<u>Land</u>	<u>Construction Status</u>
Arizona, Tucson (Entomology, crops, and related agri- cultural engineering research facilities)	\$585,000	Negotiations in progress for transfer of site to the Depart- ment by the State University	Design criteria being prepared
Georgia, Byron (Regional tree fruit and nut crop station for the Southeast)	500,000	Negotiations for transfer of land declared excess to Navy needs has been made to General Services Administration	Design criteria being prepared
Illinois, Carbondale (Small fruit research facilities)	165,000	Deed to site has been offered by the State to the Department	Drawings being prepared
Maryland, Beltsville (Modernization of heat- ing, water and electrical facilities at Agricultural Research Center)	160,000	Federally-owned	Formal archi- tect's plans not required
Michigan, East Lansing (Addition to facilities for research on avian leukosis)	450,000	Federally-owned	Design criteria being prepared
Soil and water research facilities:			
Georgia, Watkinsville (expansion of present facilities)	125,000	Federally-owned	Design criteria have been sent to G.S.A. to proceed with preparation of architect's plans

<u>Item</u>	<u>Amount Provided</u>	<u>Land</u>	<u>Construction Status</u>
Soil and water research facilities - Cont.			
Montana, Sidney (new facility)	395,000	Deed to site offered by the State	Design criteria completed. Architect pre- paring plans.
North Dakota, Mandan (expansion of present facilities)	400,000	Federally-owned	Design criteria have been sent to G.S.A. with instructions to proceed with preparation of architect's plans
	<u>\$2,780,000</u>		

CONTINGENCY RESEARCH FUND

The Contingency Research Fund, established by Congress in fiscal 1962, is designed to provide a ready source of funds for unforeseen and immediate research needs. Releases from the fund are generally made in situations where an emergency need exists, or for special needs such as an unexpected scientific "breakthrough" or a new disease or pest problem where it appears inadvisable to wait for consideration of a request for funds for the project in the regular budget process. In allocating funds, the procedure is ordinarily to make no commitments for allocations from the fund beyond the current year.

Current activities: As of December 31, 1962, \$654,000 of the \$1,000,000 Contingency Research Fund had been released to meet a variety of needs, leaving a balance in the fund of \$346,000.

The releases from the fund have been as follows:

<u>Animal husbandry research:</u>	<u>Fiscal Year 1963</u>
To determine the influence of herd management and feeding methods on the Iodine 131 content of milk	\$119,000
For field studies related to management research on condemnation losses in broilers at State College, Mississippi	16,000
To provide winter sheep feeding facilities at Dubois, Idaho	32,000

Animal husbandry research - Cont.

Fiscal Year 1963

To purchase scientific equipment, including automatic sample changer for well-type scintillation detectors plus timer and lead adapter, and Coulter counter plus accessories for basic research on blood antigen, rumen microbiology, and other studies in animal metabolism.....	10,400	
For preparation of illustrations for completion of first volume of anatomical studies on the domestic fowl, prepared in connection with avian leukosis research ...	<u>20,000</u>	\$197,400

Crops research:

To accelerate identification of samples suspected of containing soybean cyst nematode	15,000	
For purchase of equipment and furnishings needed for the new headquarters-laboratory building at the National Arboretum	30,000	
For the continuation of a study of the use of growth regulators for sucker suppression in tobacco	30,000	
For acceleration of research at Lexington, Kentucky on improvement of tobacco quality.	<u>32,200</u>	107,200

Entomology research:

For equipment for research on electro- physiological measurement of insect sex attractants and improvement of isolation and identification techniques for use in basic research	20,500	
For determination of chlorinated hydrocarbon insecticides residues on and in potatoes..	5,000	
For support of the pink bollworm rearing facilities and purchase of equipment to produce attractant for research and survey at Brownsville, Texas Pink Bollworm Investigations Laboratory.....	25,000	
For research on control methods of the brown soft scale, a common pest of ornamental shrubs and citrus	25,000	

Entomology research - Cont.

Fiscal Year 1963

For research contract with the Michigan State University on the control of Oulema melanopa, an insect of foreign origin that has recently gained entrance into the United States. It is a very destructive pest that attacks leaves of all cereal and many grasses.....

64,400 139,900

Soil and water conservation research:

For equipment and specialized facilities for the soil and water research facility under construction at Pullman, Washington

49,300

To study new methods for recharging underground water supplies in the Southern Plains area through the use of Playa Lake water supplies (Bushland, Texas)

85,200 134,500

Agricultural engineering research:

For maintenance and operation of the addition to the National Tillage Machinery Laboratory at Auburn, Alabama, completed in November 1962. The Budget Estimates include a request of \$205,300 to meet such full-year costs in 1964...

50,000

Human nutrition research:

Equipment for measuring low levels of beta and gamma radiation to expedite nutrition research

25,000

Total releases - December 31, 1962

654,000

In fiscal year 1962, releases from the fund totaled \$1,000,000 and were made for the following purposes:

Animal husbandry research:

Fiscal Year 1962

Epidemiological studies on losses from avian leukosis in young poultry which have become of major importance in broiler condemnations, and in flocks previously believed to be genetically resistant

\$17,000

Animal husbandry research - Cont.

Fiscal Year 1962

Research on hazards of radioactive fallout to farm animals and edible animal foods and development of farm practices to avoid or minimize harmful effects and contamination. Further information in this area is needed because of recent nuclear testing (research contract).....

112,800

Initiation of research to determine the effect of energy level on reproductive performance of 2-year old beef cows nursing calves, including purchase of 300 yearling heifers

70,700

\$200,500

Animal disease and parasite research:

In the tuberculosis eradication program positive reactions to tuberculin in animals which do not show gross lesions on slaughter are a serious problem. In a study of possible causes it has been found recently that tuberculin-positive reactions sometimes occur in laboratory animals and cattle fed mycobacteria or feeds containing tankage or steamed meal. Funds were provided for study on a larger scale to determine possible extent of the reaction. (research contract)

100,000

Crops research:

For equipment for laboratory established at Fargo, North Dakota, for quality research on hard red spring wheat. Previously this research had been conducted at Beltsville, Maryland, for a number of years

117,180

Preliminary studies on the use of new growth regulators for sucker suppression in tobacco, including evaluation of promising compounds under field conditions. A growth regulator previously used widely for this purpose has caused controversy between producers and the buyers and manufacturers who object to the physical appearance of tobacco so treated and to adverse effect on manufacture and smoking quality

21,000

Crops research.- Cont.

Fiscal Year 1962

Adaptation of existing facilities for storage of carrots. Special storage for specific periods of time is required for carrot breeding research	7,700	
Investigation of the effects of air pollution on the carbohydrate metabolism of citrus trees to follow up recent studies indicating a link between polluted air and metabolic disorders in plants (research contracts).....	<u>20,000</u>	165,880

Entomology research:

Study of aphids known to transmit virus yellows and related virus diseases of sugar beets which have recently caused serious losses in the Pacific Northwest	15,000
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Screening and testing insecticides effective against the banded cucumber beetle to provide control methods which could be made available to the farmer immediately (research contract).....	50,000
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Initiation of research on protective measures against the threat of the face fly, a serious livestock pest, which has spread to 32 States	10,000
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Search for new methods to control the western corn rootworm which has recently given signs of resistance to conventional insecticides (research contract).....	30,000
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Initiation of research on brown soft scale which has become a serious problem of the Texas citrus industry in the past year. This problem has been associated with use of insecticides on citrus or other crops and there are indications their use may have an adverse effect on the biological control complex.....	26,850
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Purchase of equipment needed at Southern Grain Insects Research Laboratory, Tifton, Georgia, to sterilize soil used in greenhouse, also in insect rearing cages and other contaminated equipment.....	10,675
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Entomology research - Cont.

Fiscal Year 1962

Purchase of ultra centrifuge and
accessories for Boll Weevil Research
Laboratory, State College, Mississippi,
for isolation of cotton plant and
insect cell components

9,665

Purchase of portion of equipment and
other expenses at Mission, Texas, for
screwworm research which was transferred
from Kerrville, Texas, because of
initiation of eradication program in the
Southwest

19,340 171,530

Soil and water conservation research:

Additional facilities at East Franklin,
Vermont, to effectuate the recommendation
of Conference Report 276 on the 1962
Department of Agriculture and Related
Agencies Appropriation Bill, 87th
Congress, 1st Session

15,000

For investigation of the possibility of
using selenium-bearing fertilizers in
the production of herbage to prevent
muscular dystrophy in sheep and cattle,
with special emphasis on the complications
caused by sulphur content of the soil.
This disease has been associated with
selenium content of feed, and occurs in
a geographic pattern (research contract)

25,000

Purchase of X-ray diffraction unit needed
at Salinity Laboratory, Riverside,
California, for research on saline soils,
movement of water in soils, and its
relation to soil structure, etc.

10,740 50,740

Agricultural engineering research:

Purchase of a large capacity dehydrator
for accelerating engineering research
on pelleting coastal Bermuda grass

19,330

Agricultural engineering research - Cont.

Fiscal Year 1962

Initiation of research to determine the effect of county wide light trappings on the population of tobacco hornworm moths in the vicinity of Oxford, North Carolina, and to demonstrate whether the principle of area control with light traps would be a sound approach to control

26,800

Purchase of automatic data recorder and scanner for engineering research on growth chambers used for crops production research

12,890

59,020

Utilization research and development:

Development of protein-rich preparations from wheat that are dispersible in water and which are low-cost, nutritious, appetizing, milk-like products, saleable in foreign countries that are short of dairy products. Exploratory research indicates such a product can be developed which would have both domestic and foreign outlets (research contract).....

100,000

Research on constituents in dry beans causing flatulence. This research, together with adjustments in other programs, will provide substantial aid in solving problems of the dry bean industry (research contract).....

45,000

Purchase of a centrifuge for research on more efficient method for removal of strontium-90 and other radionuclides from milk and automation of pilot plant for continuous operation

42,800

Equipment for increased research on inactivation of cyclopropene acids (so-called "Halphen" acids) in cottonseed products inasmuch as they cause discoloration of eggs in storage

21,400

209,200

Human nutrition research:

Purchase of electron microscope and accessories for exploration of fine structures of tissues from animals used in nutrition studies.....

43,130

Total releases

1,000,000

PLANT AND ANIMAL DISEASE AND PEST CONTROL

PLANT DISEASE AND PEST CONTROL

Current Activities: Insect and plant disease control, eradication, and regulatory programs designed to protect agriculture from destructive insects, nematodes, and plant diseases are conducted in cooperation with State and local agencies, and for certain programs in cooperation with the Republic of Mexico and Dominion of Canada. The work includes surveys and inspections to detect and appraise infestations, conduct of eradication and control activities, and regulatory action to prevent interstate spread of infestations to uninfested areas.

Inspection and regulatory activities, primarily inspections at ports-of-entry, are conducted to prevent the introduction from abroad of insect pests, nematodes, and plant diseases, to prevent movement of such plant diseases and pests between United States possessions and the mainland, and to provide certification of freedom of pests on plants and plant products to meet import requirements of countries of destination.

Selected Examples of Recent Progress:

Plant Pest Control

1. Fruit insect control and eradication programs:

- a. Citrus blackfly control efforts, cooperative with Mexico, have been successful in preventing reinfestation in the citrus area of Texas. These activities have included the use of biological and chemical treatments by the Mexican Department of Agriculture to prevent northward spread from areas in Mexico near the United States border and strict enforcement of quarantine regulations.

A rapid buildup of infestations late in calendar 1961 in the Montemorelos-Allende-Linares citrus area of Nuevo Leon, Mexico, was largely under control by the end of fiscal 1962. A winter freeze, and chemical treatment of some 300,000 host plants all combined to reduce these infestations to the mop-up stage, thus re-establishing an effective barrier between known infested areas in Mexico and citrus-producing areas in the United States. (See Figure 1).

- b. Mediterranean fruit fly. Since the Medfly was eradicated from Florida in 1958, a continuing detection survey has been maintained throughout the State and in strategic areas of other Gulf States. This program involved some 8,000 traps baited with a lure attractive to fruit flies.

A fruit fly specimen collected from one of the traps in Miami was identified as a Medfly on June 12. Within 48 hours eradication spraying was started and trapping was intensified throughout the State. Additional incipient infestations were located in Dade County and a few flies were trapped in Broward and Palm Beach Counties.

Early discovery and prompt action by State and Federal workers confined the 1962 infestations to small areas in the three counties. Quarantine regulations were lifted from the regulated areas in Dade and Palm Beach counties, on October 23 and November 24, 1962 respectively. Regulations remain in effect in a portion of Broward County where a single fly was trapped on November 2. As of December 31, 1962, eradication appears to have been accomplished.

- c. Mexican fruit fly. This pest, a native to northeastern Mexico has spread through much of the citrus area of Mexico and is now periodically found in small numbers in Baja California. A cooperative spray program in Mexico adjacent to the California border, rigid quarantine enforcement, and protective spraying in California groves near the border have prevented re-establishment of infestations in southern California since the pest was eradicated there in 1957. These protective activities are continued because of the constant threat of reinfestation. (See Figure 2).

In the Lower Rio Grande Valley of Texas some Mexican fruit flies become established in limited areas each fall and winter. However, quarantine procedures, including the fumigation of fruits after infestation has prevented spread of the pest to other areas in the United States.

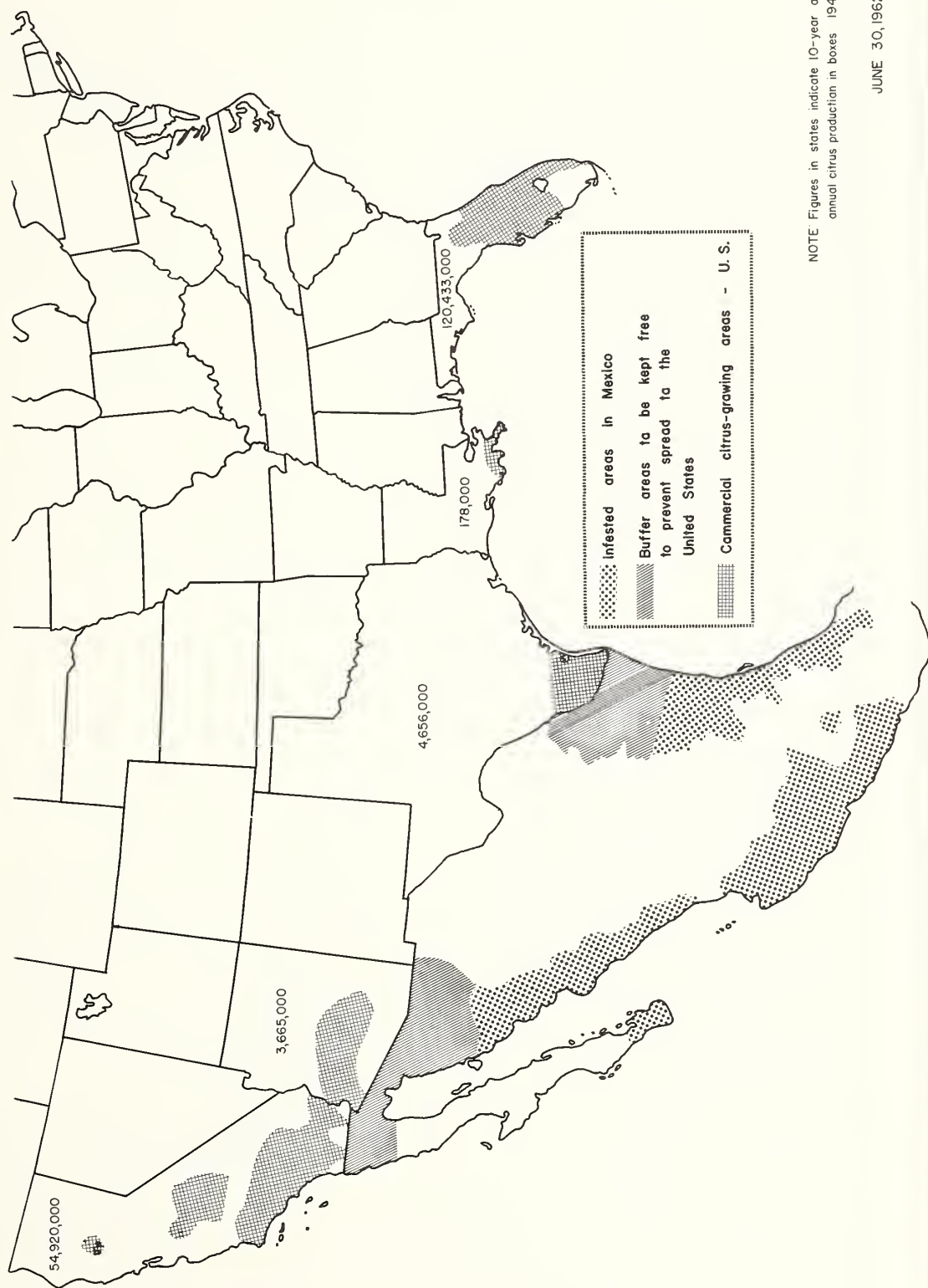
2. European chafer. During fiscal year 1962, there was some spread of the European chafer from established infestations in Upper New York counties and at Richmond County (Staten Island). New infestations were established in Albany, Herkimer, Schuyler, and Queens Counties. In Connecticut, there was some extension of the known infested area, but no new areas were found infested.

During the year, 1,621 traps were placed in strategic locations in 20 States. No new States were found to be infested in 1962.

In New Jersey, some 6,300 acres have been treated since the European chafer was first discovered in 1960, including all known infestations.

3. Imported fire ant. As a result of work conducted at the methods improvement laboratory at Gulfport, Mississippi, a new bait has been developed which is proving highly effective against the imported fire ant. This bait is made from corncob grits impregnated with soybean oil (an attractant) containing a new insecticide called "mirex". Ten-pound-per-acre applications of the bait, containing less than one-seventh ounce per acre of toxicant, have been highly successful on field-scale block tests. During fiscal year 1962, more than 160,000 acres were treated in large experimental blocks. Evaluation studies of these blocks indicate that some mop-up and retreatment will be necessary to accomplish eradication. Further studies are being made to determine the most effective timing of applications.

CITRUS BLACKFLY CONTROL

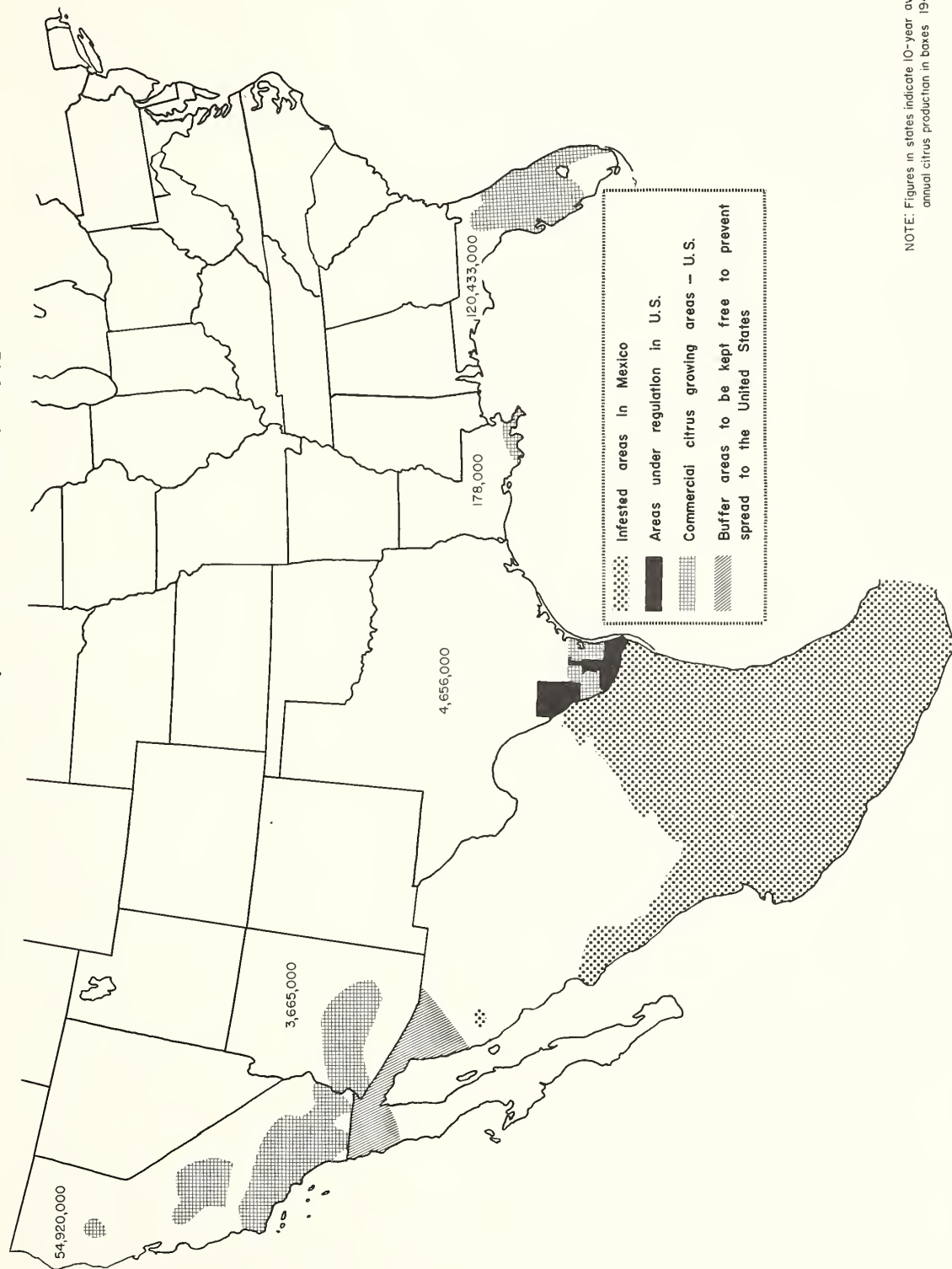


NOTE Figures in states indicate 10-year average annual citrus production in boxes 1949-1958

JUNE 30, 1962

FIGURE 1

MEXICAN FRUIT FLY CONTROL



NOTE: Figures in states indicate 10-year average annual citrus production in boxes 1949-1958

JUNE 30, 1962

FIGURE 2

Through October 1962, more than 77,000 acres of civil and military airport turfed areas have received insecticidal treatments to destroy the soil-inhabiting forms of this and other pests. Such treatment also provides an unfavorable environment for soil-inhabiting insects which may come from other countries in aircraft. When facilities permit, this means of preventing spread will be extended to rail and truck terminals in and near infested areas. This phase of the program is being favorably considered abroad. Orly Field, Paris, France, will be so treated this year by French agricultural authorities.

Since late in 1961 and thus far in 1962, more than 182,000 acres of outlying infestation in states along the periphery of general infestation and in California were subjected to eradication treatments. Of this total 80,000 acres were in southeastern Michigan. More than 59,000 traps were employed in border states and at selected spots in Western and Southern States to detect spread. All known infestations west of Illinois, including those in California, were treated during the 1963 season.

7. Khapra beetle eradication. During the year, nearly 43,000 properties were inspected for this destructive grain pest in Arizona, California, New Mexico and Texas. About 5,000 properties were inspected in other states. More than 800 properties were inspected in Mexico, where the last known infestation had been fumigated early in the year. During the year, 10 premises involving about 4 million cubic feet of building space were found newly infested; 9 in Arizona, and 1 in California. All these properties were treated or have been scheduled for treatment. (See Figure 6).

At the close of the year the property of a feed dealer in southeastern Arizona was found infested. In tracing his sales, about a dozen properties were found infested. This development emphasizes the importance of continued surveys to detect incipient infestations before they become widespread. Such incipient infestations may stem from isolated undetected infestations or from low-grade infestations which can escape notice in imported material.

During the year, more than 6 million cubic feet of storage space on 15 properties was fumigated including premises found infested late in the previous fiscal year. Since the beginning of the program (1955), 767 properties involving 182.1 million cubic feet have been fumigated.

Infested properties are placed under quarantine and all host material shipped therefrom must be fumigated until the entire premises have been treated and released from regulation.

8. Pink bollworm control. Vigorous enforcement of regulations and intensive cultural control work throughout the generally infested areas of Texas and Northern Mexico has substantially reduced populations over the past 3 years. (See Figure 7). During the 1962 crop season, populations have

STATUS OF IMPORTED FIRE ANT

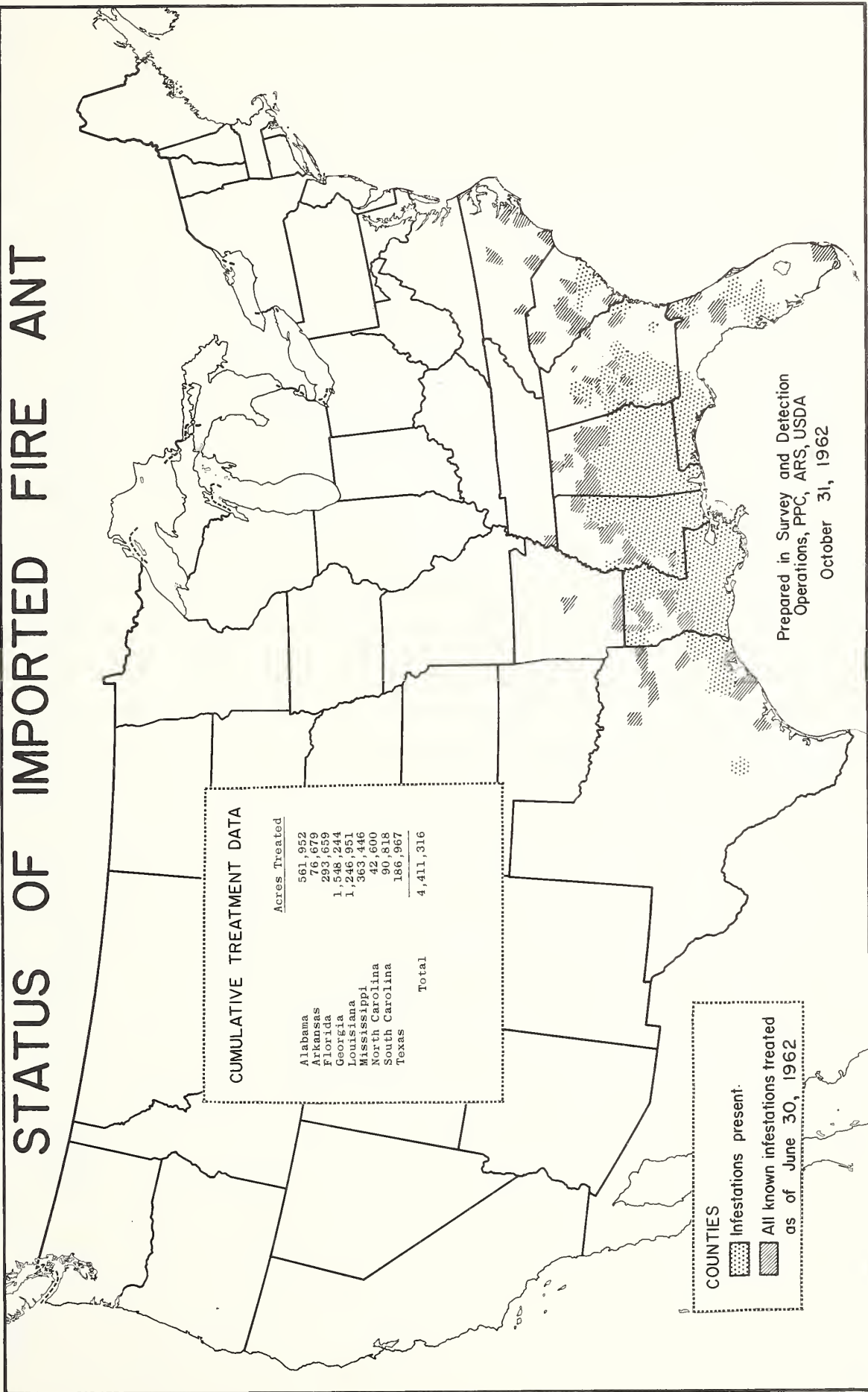


FIGURE 3

GYPSY MOTH ERADICATION

Status of Cooperative Federal-State Eradication Program

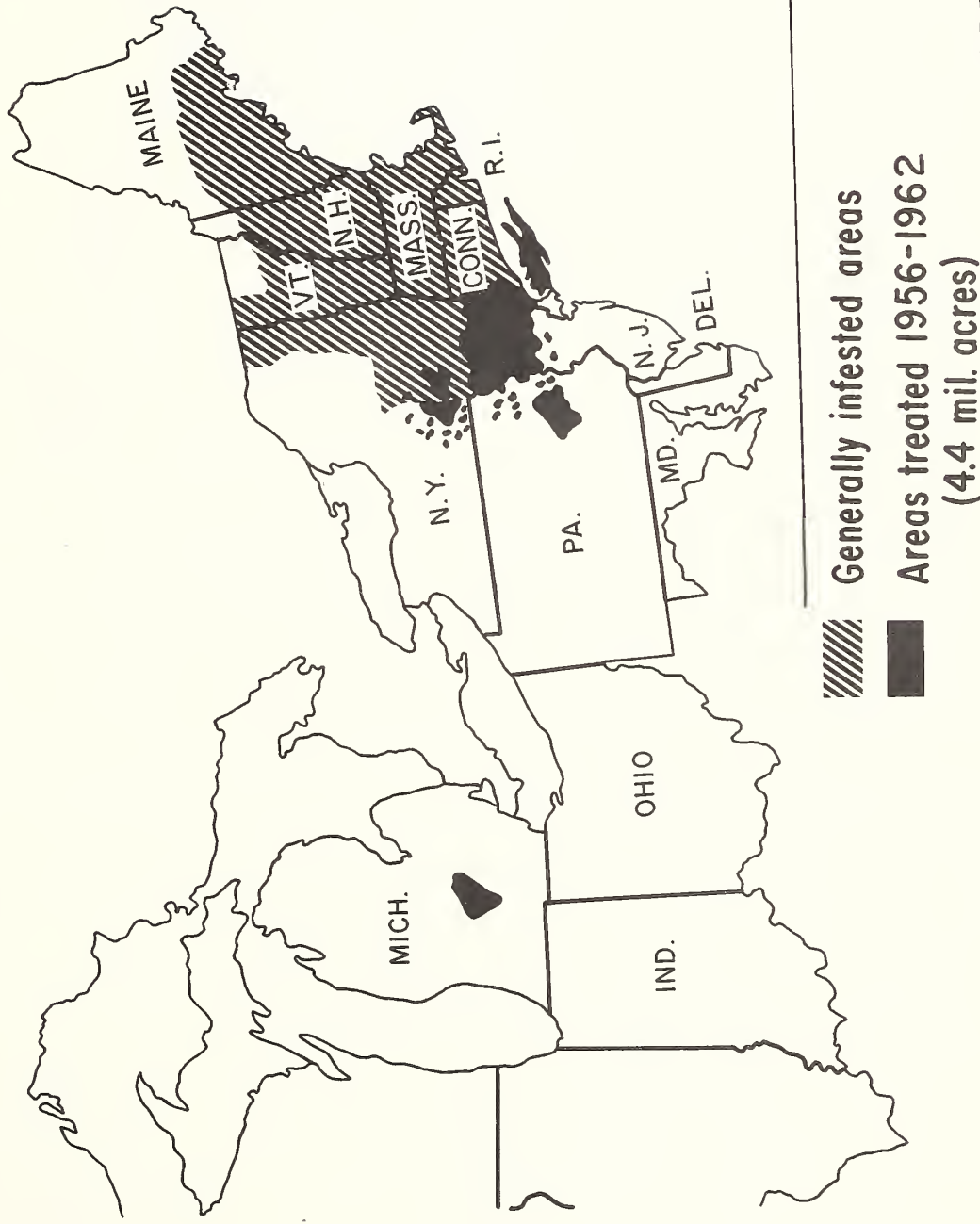


FIGURE 4

JAPANESE BEETLE

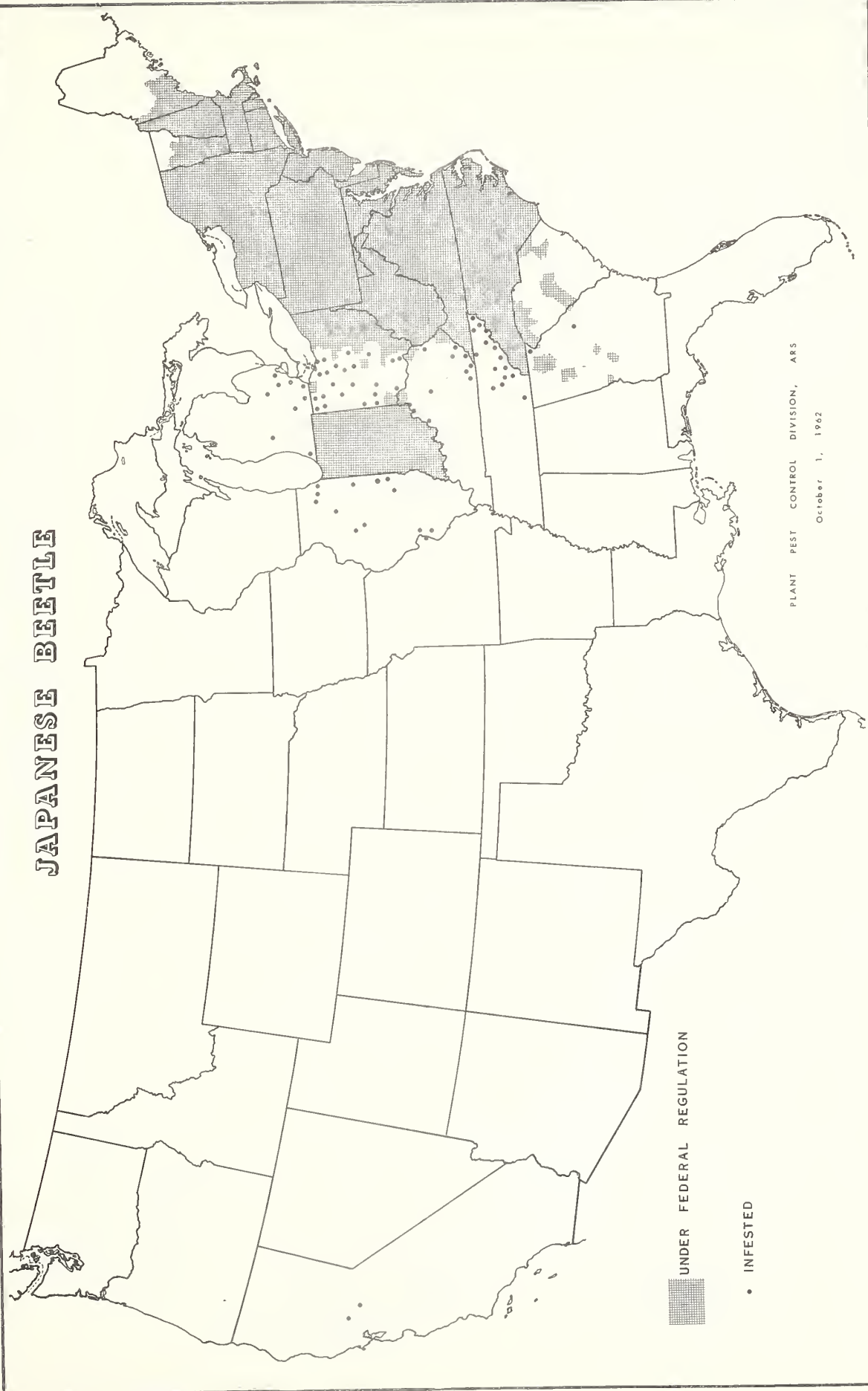


FIGURE 5



KHAPRA BEETLE ERADICATION

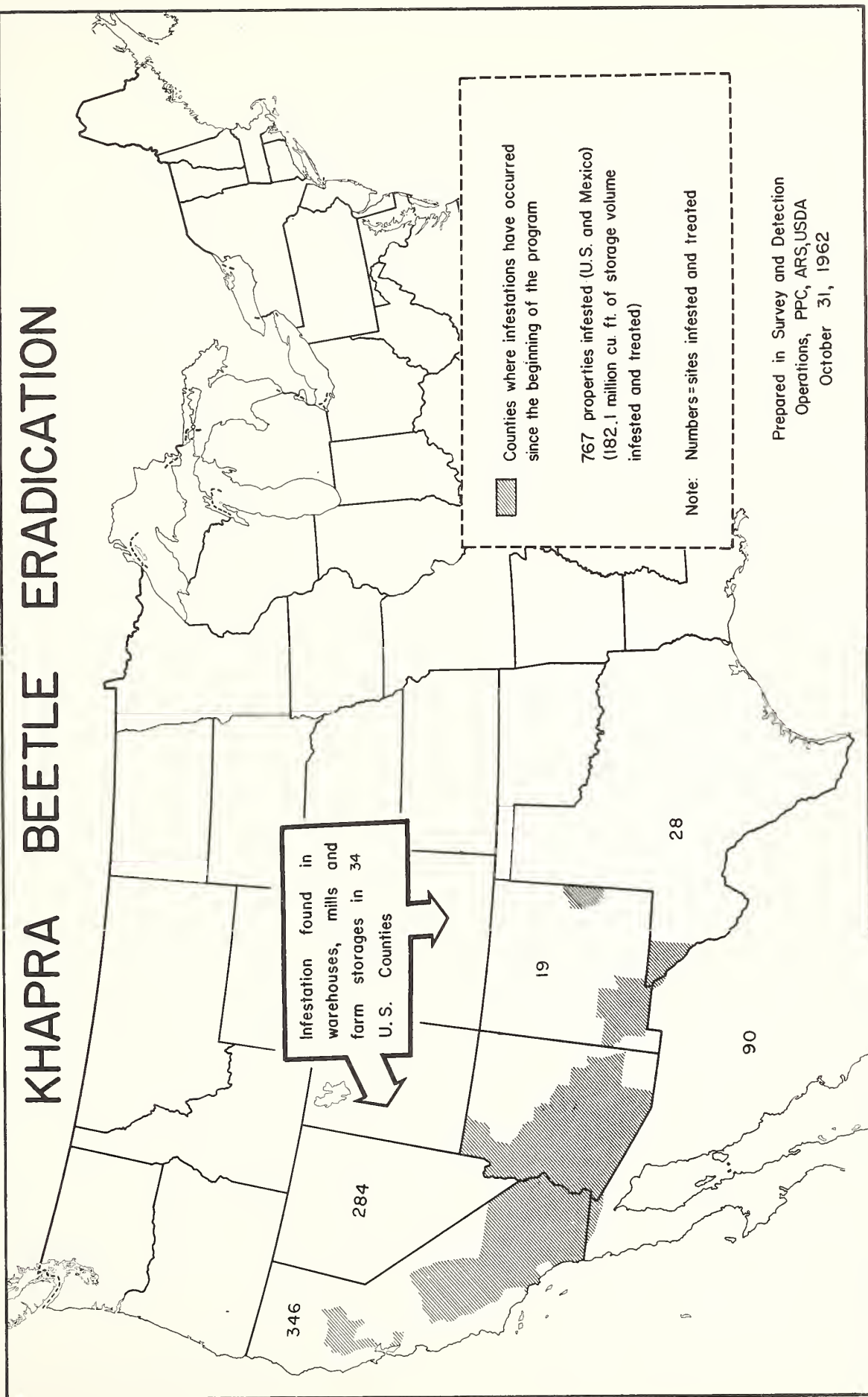


FIGURE 6



PINK BOLLWORM CONTROL

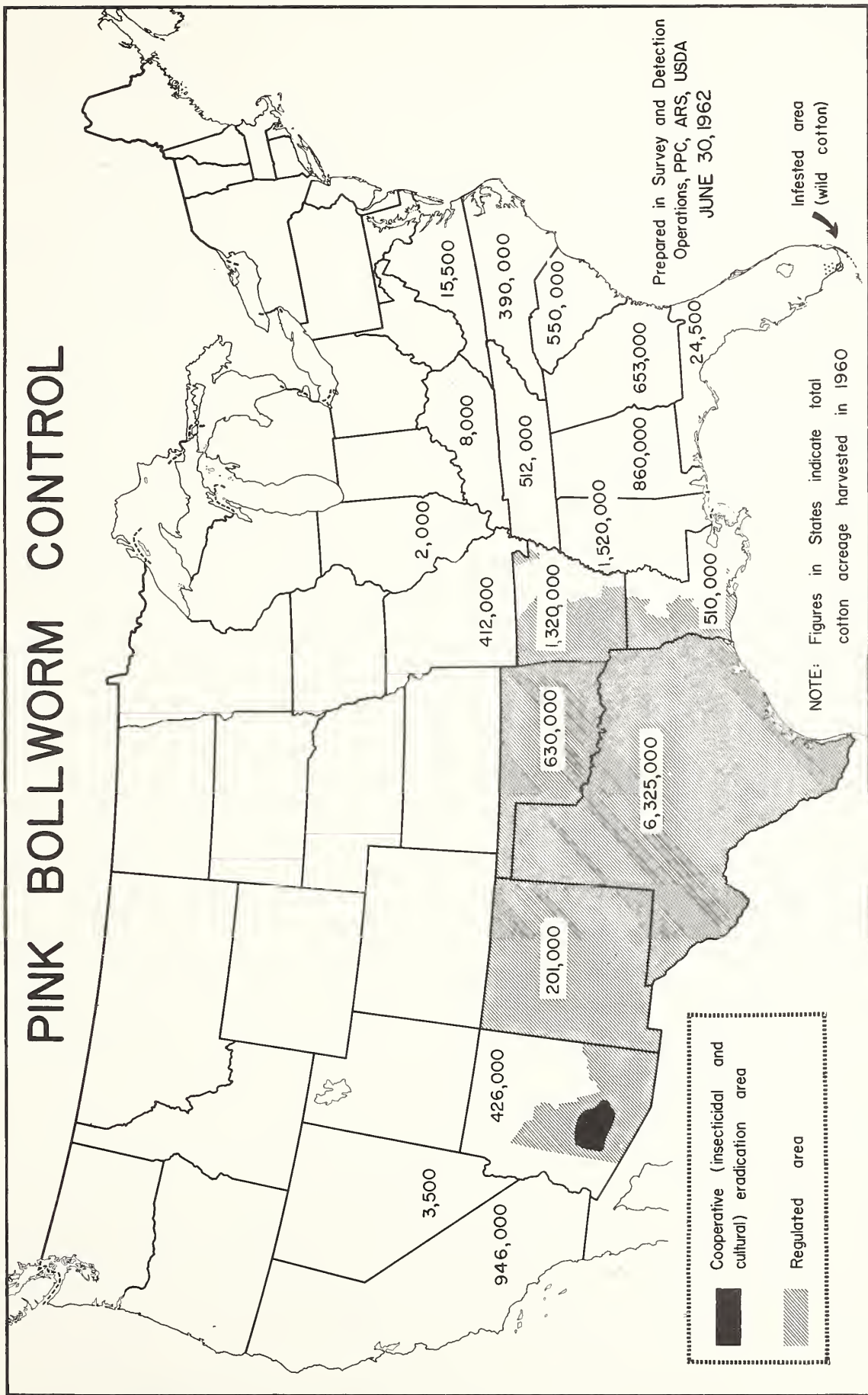


FIGURE 7



remained low except for the Texas coastal bend area where the lack of winter rain contributed to a substantial increase in the number of pink bollworms found this season. Surveys conducted late in the fall have revealed the reappearance of the pink bollworm in two parishes in western Louisiana and two counties in southwestern Arkansas.

In central Arizona where there is a joint Federal-State-Industry effort underway to eradicate all outlying infestations only 1,159 acres required treatment during the 1962 season. Originally, this area involved some 75,000 acres in five counties. Surveys recently completed have revealed only a single pink bollworm larva to date. This represents an area of 300 acres which will require chemical treatment in 1963.

Boll weevil. Surveys in 1959 and 1960 indicated that a new strain of boll weevil had entered the United States from Mexico to become established in the Presidio Valley and was gradually spreading northward toward El Paso. This constituted a serious threat to the cotton-producing areas of western Texas, Arizona, California, and New Mexico. In the fall of 1961, the Republic of Mexico, the States of Texas and New Mexico and the cotton industry undertook cooperative field tests to determine the feasibility of a program to prevent further spread of the boll weevil. Infested cotton fields were treated along a 125-mile strip bordering the Rio Grande River in Mexico and Texas. Approximately 2,500 acres of cotton were treated at 14-day intervals to eliminate the weevils about to enter winter hibernation. The infested fields were treated three times with an aerial application of methyl parathion. Surveys conducted during the 1962 crop season indicated that these treatments had been very effective, indicating that a suppressive program to prevent further spread is practical.

In the fall of 1962, plans were made to follow-up on the 1961 field trials. On September 21, 1962, the first of 3 or 4 applications depending upon the frost date were made on 2,400 acres along the Rio Grande River in Texas and Mexico. The program was extended to include another 3,000 acres of cotton near Magdalena, Sonora, Mexico. This area is south of Nogales, Arizona, and about 45 miles from commercially-grown cotton in the United States. Techniques recently developed by research workers are being utilized in this containment effort.

9. Sweetpotato weevil control. Early in January 1962, severe freezing weather destroyed the wild-host-plants and the sweetpotato scraps where the sweetpotato weevil overwinters in the fields throughout much of the infested area of the southeastern States. This resulted in the elimination of most of the infestations remaining in the fields leaving only the protected storage facilities where the sweetpotato weevil could overwinter and subsequently reinfest fields. (See Figure 8).

With an approved release from the contingency fund, an intensified program was undertaken to locate and destroy the infestations remaining throughout the freeze area. Approximately 77,000 inspections were made in 9 states. As a result 2,122 properties were found infested in 7 States. All infestations were treated with an insecticide or otherwise destroyed. As an added protective measure, seedbeds, where the weevil may have been

protected, were included in the program. Surveys this fall indicate the numbers of infested properties has been reduced to the lowest level in many years. Sweetpotato growers and State officials enthusiastically supported this program with the growers actively participating in much of the treatment at their own expense.

10. White-fringed beetle control. In F.Y. 1962, a total of 54,612 acres were treated with insecticide for the control of white-fringed beetles. A portion of this acreage accrued from treatments made jointly for this pest and the imported fire ant. (See Figure 9). All known infestations in Arkansas and Kentucky were included.

Treatments were applied to 19,059 acres for regulatory purposes which included retreatment of a substantial acreage of nursery land, the latter carried out to assure a continued eligibility of nursery stock and other commodities for certification.

During the 1962 season, a heavy infestation of adult beetles was reported in Greene County, Tennessee. No white-fringed beetles have previously been found in the Appalachian Mountain area nor at this high altitude. Extensive damage is occurring to crops, including tobacco, demonstrating the heavy damage that can occur when such infestations go unchecked. No less than 2,000 acres will require an eradication treatment and intensive regulatory procedures must be instituted. In the fall of 1962, a new infestation was found in Norfolk, Virginia. Surveys are continuing and infested areas are being treated with a soil insecticide.

11. Burrowing nematode. In September 1961, the control program for the burrowing nematode was modified, and a barrier or buffer zone method of control was instituted. Under the new program, chemical barriers are being established around all infestations to prevent spread to new areas. This will permit grove owners to continue to harvest a crop of citrus from the decline trees until they deteriorate to a point where production is no longer profitable. When this point is reached the trees will be removed at state and land-owner expense and the land fumigated without the owner suffering avoidable loss of income.

Approximately 93 miles of chemical barriers or buffer zones have been established to encircle 3,606 acres of citrus infested with the burrowing nematode. When 150 miles of barriers are completed, some 7,500 acres of citrus plantings now known to be infested will have been encircled protecting 700,000 acres of citrus trees.

12. Golden nematode. Good progress is being made in eliminating the golden nematode from Long Island, New York. In the soil fumigation program, started in 1960, a total of 30 properties representing 1,739 acres were treated by June 30, 1962. An additional 22 properties, 778 acres, were treated during the 1962 crop season.

Although surveys have been made in other potato-producing states each year since 1944, no infestations have been found outside Long Island.

SWEETPOTATO WEEVIL CONTROL

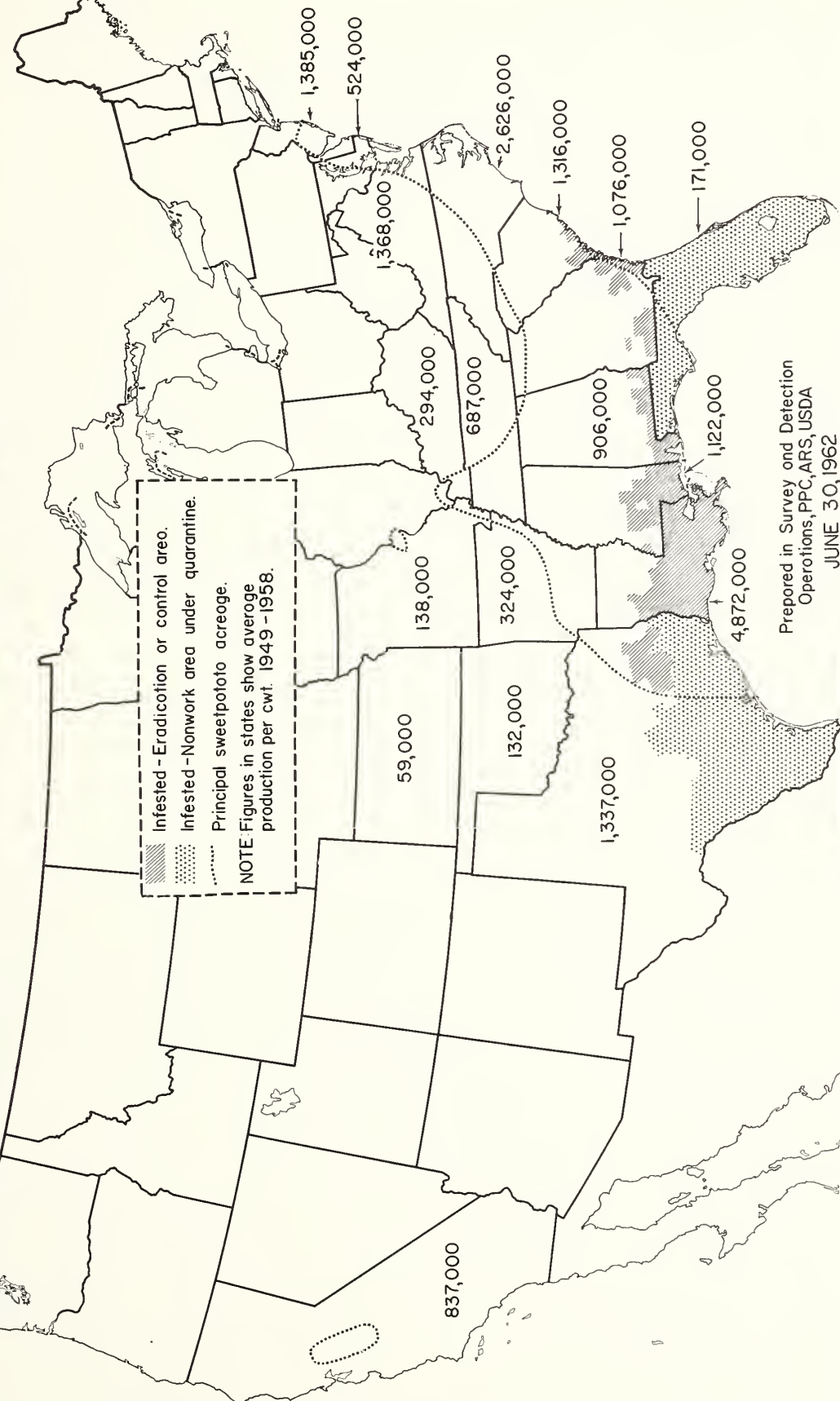


FIGURE 8

WHITE-FRINGED BEETLES

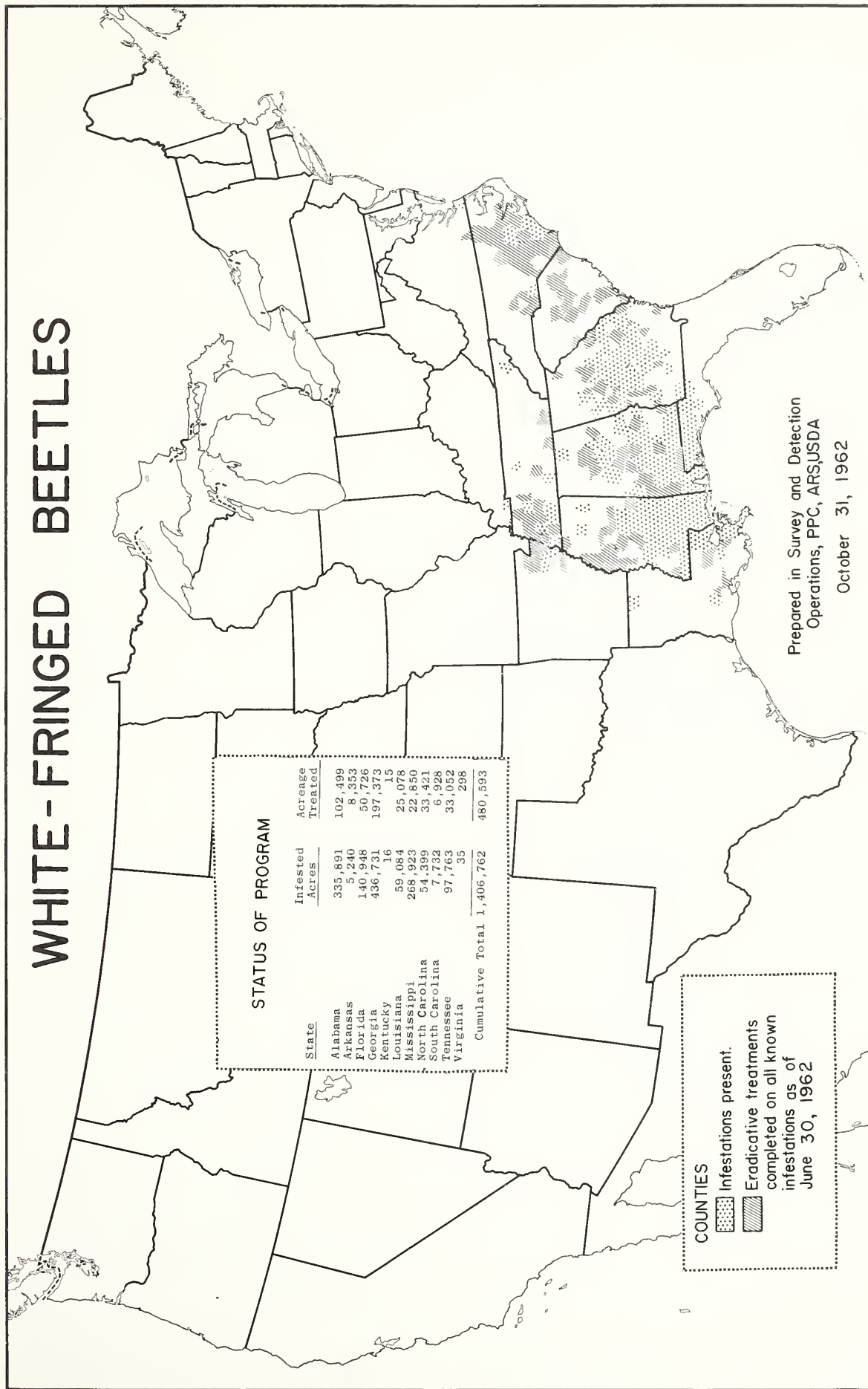


FIGURE 9

13. Soybean cyst nematode. Significant crop damage directly attributed to the soybean cyst nematode has occurred this year in several localities in Tennessee, Missouri, Arkansas and North Carolina. (See Figure 10). The greatest effects are evident in fields on which soybeans have been grown for two or more consecutive years.

Plant breeders have had some success in developing soybean varieties resistant to the cyst nematode and satisfactory for other characteristics except for its black seeds. In all cases, however, the resistance is associated with black coated beans which is an undesirable characteristic from the standpoint of marketing. However, when sufficient seed become available, it may be possible to use these varieties on an emergency basis in areas of heaviest infestation, thus contributing to the overall control effort.

14. Barberry eradication. In fiscal year 1962, more than 6,000,000 rust-susceptible barberry and mahonia bushes were destroyed. An additional 2,200,000 were destroyed by October 1962.

In support of Federal Quarantine No. 38, some 600 nursery properties were inspected and certificates of inspection were issued permitting interstate shipment of approved species of barberry and mahonia.

15. Hoja blanca. This damaging virus disease of rice, which is spread by a planthopper, was found for the first time in the United States in Florida in 1957. In 1958, its presence was detected in Mississippi; in 1959, it was found over an extensive area consisting of 14 parishes in Louisiana. Eradication treatments consisting of the application of an insecticide were applied to destroy the insect vector.

For two years no disease or vector was found in any state. However, surveys in 1962 revealed 34 properties involving 5,361 acres in 7 parishes of Louisiana infested with the vector, though no disease was found. Since the discovery of the vector, eradication measures have been applied to an aggregate of 10,851 acres.

16. Phony peach and peach mosaic eradication.

Phony peach disease. In F.Y. 1962, 6,707,690 peach trees were inspected and 19,186 found infected with phony disease, an infection incidence of 0.3 percent. This low incidence of the disease has prevailed for the past 8 years and results from the program of prompt tree removal and suppression of wild plum which serves as a reservoir of the disease. The current disease incidence may be contrasted with the 1952 rate of 2.5 percent.

Peach mosaic. In F.Y. 1962, 3,849,599 peach trees were inspected and 1,184 trees found infected with peach mosaic. This is a disease incidence of only 0.03 percent. This low incidence rate has been maintained since 1955 as a result of the program of diseased tree removal, budwood inspection, and other regulatory measures. The present disease incidence may be compared with the 4.16 percent in 1935.

In Mesa County, Colorado, an area of heavy peach production with a previous record of high disease incidence, 534 peach mosaic infected trees were found in 1962. This is the third consecutive year diseased trees have amounted to a low of around 500 trees. Aside from minor outbreaks in a few orchards in the outlying fringe areas, all major commercial districts in Colorado showed a reduction over last year in the number of diseased trees found. This is the most outstanding and consistent example of control of the disease in the 27-year history of the program in Colorado.

The necessity for frequent resurveys of previously infected counties throughout the peach mosaic infected states was demonstrated in a survey of Washington County, Utah. This county, after a clean-up program had been completed in 1946, was released from quarantine in 1950. A survey in 1961 revealed 34 infected trees on 15 properties. In 1962, 101 infected trees were found indicating the explosive nature of the disease when not controlled.

17. Witchweed eradication. Despite extensive surveys only minor extensions of the area infested with witchweed have been found. In 1962, a county with a single infested field--adjacent to the generally infested area--was added to the list of those known to be infested. There are now 31 counties involving 10,500 farms known to be infested with witchweed in North Carolina and South Carolina. Surveys in the surrounding states and the Corn Belt of the United States have all been negative. (See Figure 11).

A vigorous eradication program is underway. More than 153,000 acres of land infested with witchweed were treated with one or more applications of 2,4-D to prevent the production of seed during the 1962 season. This work was accomplished by commercial applicators using some 80 high-clearance spray machines and nearly 100 hand-operated sprayers to treat an aggregate of nearly 459,000 acres. The remaining 82,000 acres infested with witchweed are planted to clean cultivated crops, such as cotton and tobacco; or a trap crop, such as soybeans.

Many of the heavily infested fields, which have been included in the eradication program for two or more years, are responding to treatment. Repeated surveys have shown these fields to be nearly free of witchweed. This has encouraged an optimistic attitude and confirms the belief that the witchweed can eventually be eradicated from the United States.

18. Insect detection and service survey operations. The trapping of a single Mediterranean fruit fly on June 8, 1962, in Miami, Florida emphasized the importance of early detection of important plant pests. The discovery of this incipient infestation resulted from the systematic trapping program maintained after the extensive Medfly eradication program was completed in 1958. Intensive delimiting surveys, prompt application of eradication treatments to all infestations found, and strict quarantine regulations all contributed to confining this invasion to relatively small acreages in three adjacent counties in Florida.

SOYBEAN CYST NEMATODE

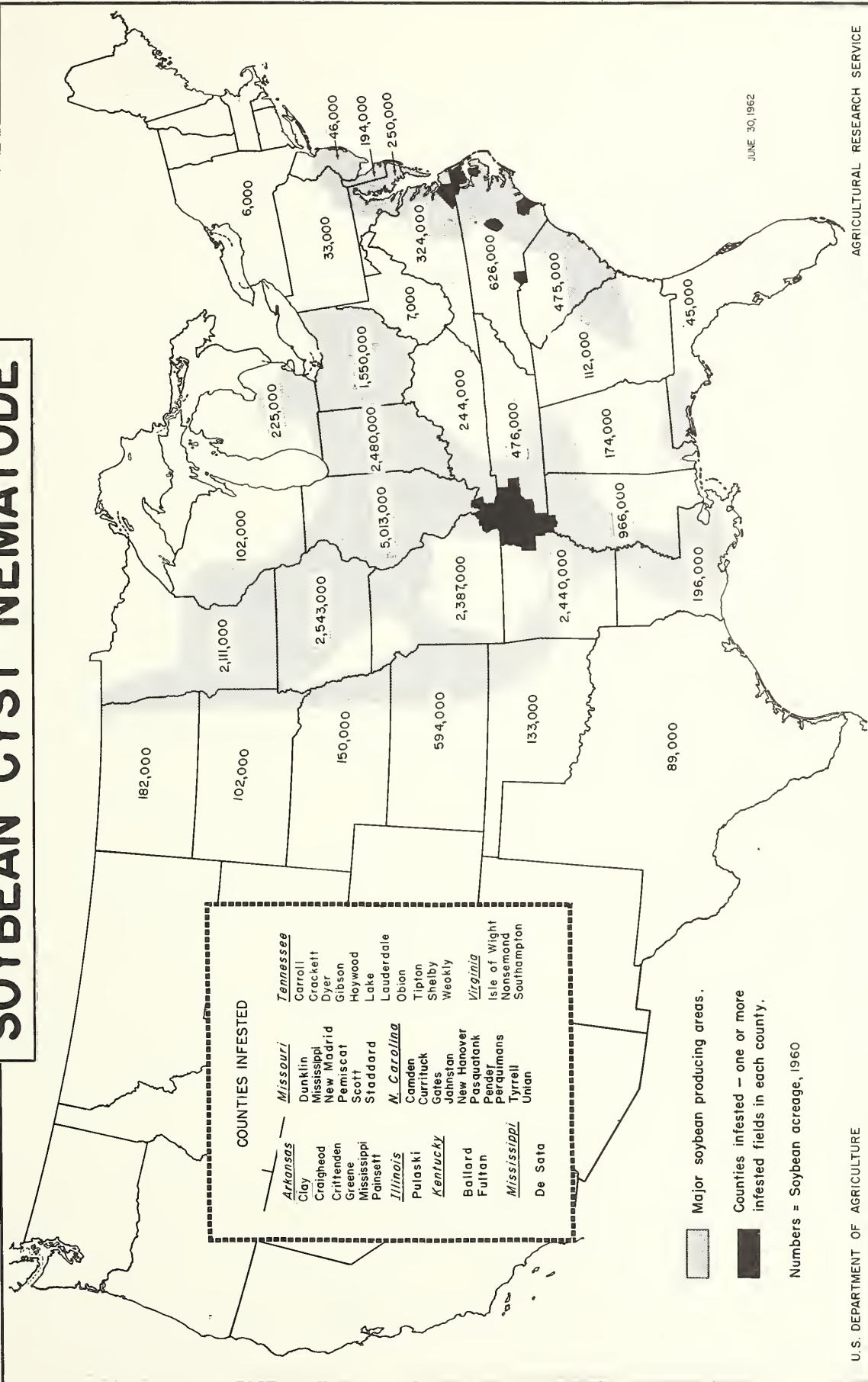


FIGURE 10

A new pest, cereal leaf beetle of considerable importance to the grain producers in the United States was discovered in Michigan and Indiana during the growing season of 1962. This pest is a leaf feeder that attacks the leaves of small grains, particularly oats.

The recent employment of survey entomologists in Ohio and Michigan adds two important agricultural states to the organized insect detection and survey effort. This addition brings to 28 the number of states with which cooperative agreements have been completed with full-time survey entomologists being cooperatively employed in 25 of these.

19. Contingency fund. Table 1 shows the releases from the contingency fund for fiscal years 1959 through December 31, 1962.

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE

Releases from the Contingency Fund for Control of Emergency Outbreaks of Insects and Plant Diseases, Fiscal Years 1959 through 1963 (12/31/62).

(in thousands)

	1959	1960	1961	1962	1963 to 12/31/62
Contingency Fund:					
Annual appropriation acts	\$1,000.0	\$1,500.0	\$1,500.0	\$1,500.0	\$1,500.0
Supplemental appropriation acts	500.0	- -	- -	- -	- -
Total appropriation for Contingency Fund	1,500.0	1,500.0	1,500.0	1,500.0	1,500.0
Releases for Control of Emergency Outbreaks of Insects:					
Soybean cyst nematode	320.0	- -	- -	- -	- -
Khapra beetle	80.0	- -	- -	- -	- -
Hoja blanca	- -	150.0	- -	- -	- -
Pink bollworm and boll weevil	500.0	500.0	300.0	400.0	525.0
Japanese beetle	- -	- -	- -	100.0	110.0
Mediterranean fruit fly	- -	- -	- -	105.0	200.0
Citrus blackfly	- -	- -	- -	150.0	60.0
Sweetpotato weevil	- -	- -	- -	200.0 a/	40.0
Cereal leaf beetle	- -	- -	- -	- -	250.0
Total releases	900.0	650.0	300.0	955.0	1,185.0
Balance in Contingency Fund	600.0	850.0	1,200.0	545.0	315.0

a/ Includes \$30,300 redirected to the Mediterranean fruit fly eradication program.

TABLE 1

PLANT QUARANTINE

1. Growing volume of international traffic increases danger of pest introduction. The number of entries of people through our international air, sea, Great Lakes, and border ports has increased by 50 million during the past 7 years or about 40 percent. Opportunities for foreign pests to be brought into the country have increased proportionately. In F.Y. 1962, a total of 33,033 pest interceptions were made at ports of entry--an average of one every 16 minutes. Most of these pests were taken from material found in travelers' luggage.
2. Major U.S. crops threatened by foreign pests. Destructive insects, plant diseases and nematodes capable of attacking virtually every crop grown in the United States, fruits, vegetables, cotton, wheat, rice, forests, and grasslands, regularly arrive at our ports of entry. The threat to our citrus production, valued at \$556.8 million in 1961, is a typical example. Important pests of citrus intercepted at ports of entry and the frequency of such interceptions were: citrus canker - 271, Mexican fruit fly - 76, Mediterranean fruit fly - 150, sweet orange scab - 213, oriental fruit fly - 23, Japanese citrus scale - 356, black spot of citrus - 464. These foreign pests can be especially dangerous, not only because of their known destructiveness in foreign countries, but also because in this country there may not be natural enemies of the pest to hold them in check. The wide variety of crops grown in the United States, together with our wide range of climatic conditions, make it possible for pests from all parts of the world to find conditions under which they can thrive in the event they should be introduced.
3. Traffic over Mexican border of growing concern. In fiscal year 1962, 24.7 million vehicles crossed the Mexican border with traffic arriving from as far south as Panama. This was an increase of over 9% since 1960. Completion of the Inter-American Highway will not only add to this traffic but will bring more pests occurring in Central America. Inspection facilities at the larger Mexican border ports are being expanded, and the building of new international bridges has been authorized to accomodate the increasing flow of traffic. Because of the presence in countries below the Mexican border of such destructive pests as the Mexican fruit fly, citrus blackfly, avocado seed moth, avocado weevil and the Mediterranean fruit fly, the inspection work along the Mexican border provides a vital protection to American agriculture.
4. Increasing military air traffic arriving at inland bases causes an inspection problem. In recent years there has been a sharp increase in the number of military aircraft arriving from overseas. Many of these flights land at inland bases, far removed from plant quarantine stations, making it necessary to rely upon military personnel to enforce agricultural quarantine safeguards. Only a limited amount of liaison, training, and assistance by quarantine officials is possible under present conditions. Furthermore, military personnel are frequently transferred so that there is a constant need for designating and training new cooperators in inspection and safeguard techniques to keep military personnel traveling overseas aware of the importance of complying with agricultural quarantine restrictions.

5. Export certifications help maintain foreign markets for United States farm products. Most countries will permit the importation of agricultural products only if properly certified as meeting their plant quarantine import requirements. In fiscal year 1962 United States agricultural exports amounted to more than \$5 billion. The produce of one acre of every five harvested was exported. A large proportion of the products exported involved plants and plant products requiring clearance by plant quarantine inspection personnel. A total of 38,954 export certificates were issued for commodities destined to 154 foreign markets.
6. Steps taken to meet growing inspection requirements with minimum staff. A number of measures have been taken to cope with the growing inspection workload and provide better plant quarantine protection by means other than additional staffing. Examples of such measures are:
 - a. On the Mexican border, inspectors of the Customs Service, Immigration and Naturalization Service, Public Health Service, or Plant Quarantine Division have been designated to act for all four agencies in inspection activities where this is practicable. This permits better service to the public and broader inspection coverage with a minimum of personnel.
 - b. Inspectors of the Plant Quarantine and Animal Inspection and Quarantine Divisions each enforce the regulations of both Divisions when possible, thus reducing manpower requirements and further extending inspection coverage.
 - c. Cooperative arrangements have been developed with State and other Federal regulatory officials for assistance in the enforcement of quarantine safeguards.
 - d. Close cooperation is maintained with plant protection officials of other countries, particularly Canada and Mexico. Assistance from Canadian officials in safeguarding traffic through the St. Lawrence Seaway has been especially helpful.
 - e. An extensive education program has been developed to inform travelers about plant quarantines and enlist their cooperation in observing them.
 - f. Intensive training is given the inspection staff in both the technical and regulatory aspects of the job. This is bringing about more effective enforcement by the available staff.
7. Quarantine protection strengthened through appeal to travelers. Most of the pests intercepted at ports of entry are found in unauthorized plant material brought by tourists, many of whom are not aware of the harm that could result. Efforts to inform travelers of agricultural quarantines were intensified during the year. Information on United States agricultural quarantines was printed in five foreign languages--French, German, Spanish, Italian, and Japanese--and distributed abroad with the cooperation of the State Department. This supplemented information being given to Americans traveling abroad through announcements distributed with passports and by

airline and steamship companies, travel agents, hotel and motel associations, and other groups. Quarantine notices in Spanish and English were posted at the Mexican border, in public conveyances crossing the border, and in motels along the international boundary. An expanded effort was made to supply articles on agricultural quarantines to newspapers, magazines, and television stations in the United States. Several of these articles were circulated nationally on major wire services sending news articles to thousands of individual newspapers. Several nationally-syndicated newspaper articles on agricultural quarantines have appeared. In addition, many television stations used brief announcements on the subject, and one nationwide television and radio network devoted a program to agricultural quarantines.

8. The following table reflects comparative data on the plant quarantine workload for the past two fiscal years and estimates for the current fiscal year. Current year estimates are based on known developments and trends which are expected to result in foreign travel and commerce. The increased number of airplane arrivals reflects the upward surge of air cargo shipments.

Workload Data, Fiscal Years 1961 Through 1963

	F.Y. 1961	F.Y. 1962	F.Y. 1963 (estimated)
<u>Inspections:</u>			
Airplanes, approximately 37% carrying unauthorized plant material in 1962	130,497	137,294	144,000
Vessels inspected, approximately 41% carrying unauthorized material in 1962 ..	57,049	59,952	60,000
Cargo importations of plant material under permit	74,212	76,656	80,000
Mail inspection, packages	37,787,959	39,901,732	40,000,000
Air cargo inspection, packages	658,651	848,082	1,090,000
Misc. cargo inspections (automobiles, machinery, etc., for contamination by plant pests), man hours	51,298	47,544	50,000
Packages cleaned or treated	2,606,957	2,742,021	2,750,000
<u>Cooperation with Customs:</u>			
Vehicles from Mexico	24,249,712	24,752,505	25,000,000
Baggage with surface-borne passengers from Mexico	7,435,053	7,866,379	8,065,000
Baggage, airborne, pieces of (all ports) .	11,588,758	12,295,810	13,000,000
Baggage with ships' passengers, number of pieces (all ports)	3,613,279	3,351,644	3,500,000

ANIMAL DISEASE AND PEST CONTROL

Current Activities: Nationwide animal disease control and eradication programs to protect the livestock industry are conducted in cooperation with State and local agencies. Laws and regulations are administered to prevent the spread of diseases through interstate shipments of livestock and poultry and to insure humane treatment of transported livestock. Disease conditions are diagnosed.

Through a system of inspection and quarantines, activities are conducted to prevent the introduction into this country of communicable animal diseases of foreign origin. Determinations are made regarding the freedom from disease of animals, poultry, animal products and related materials presented for importation from foreign countries. Livestock for export are inspected, health certificates issued, and facilities examined to assure provisions for humane and safe transportation. Under the Virus-Serum-Toxin Act, activities are conducted to prevent the production and interstate distribution of worthless, contaminated, dangerous and harmful veterinary biologics.

Selected Examples of Recent Progress:

Animal Disease Control and Eradication

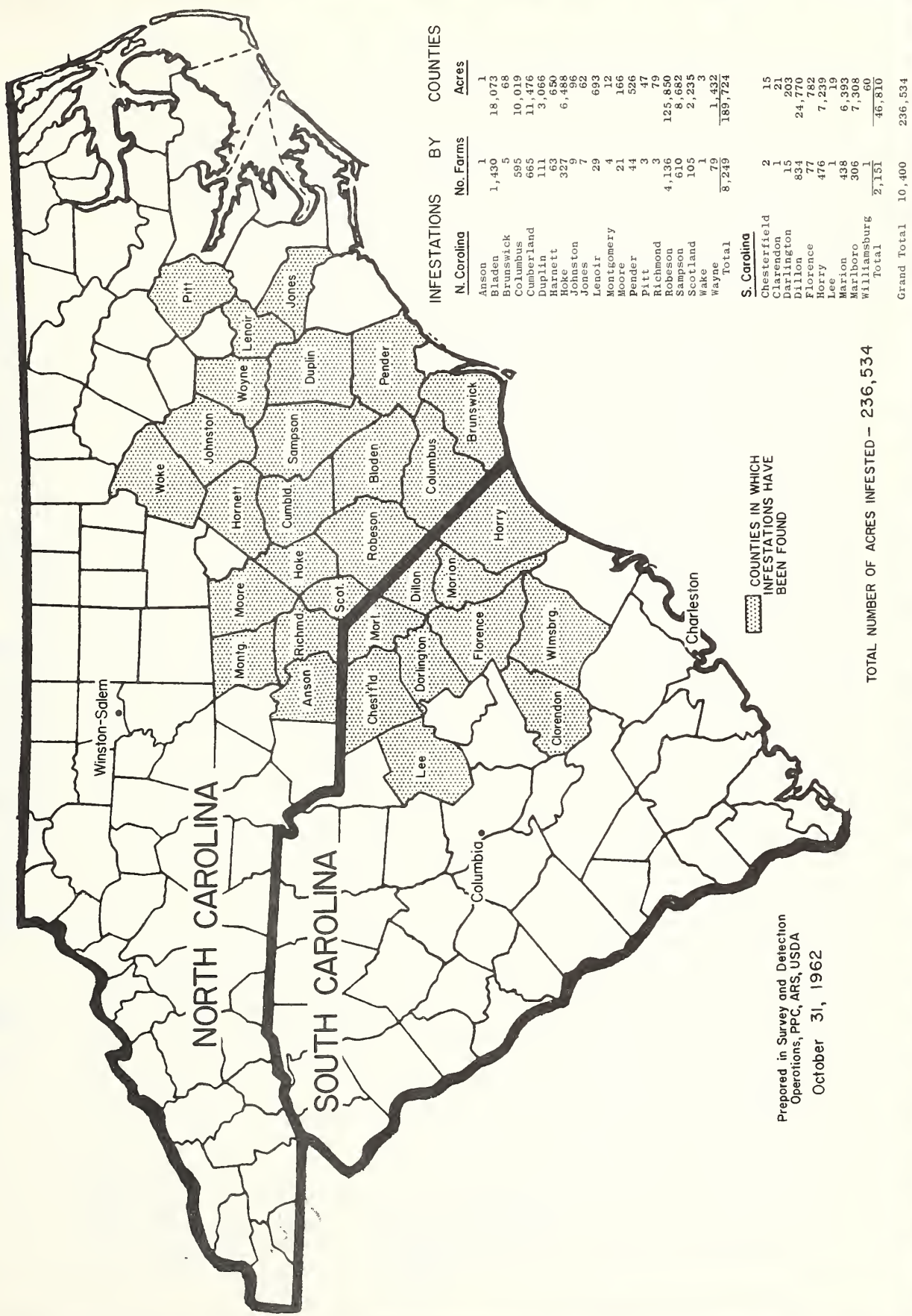
1. Tuberculosis Eradication:

- a. Results of "traceback" procedures continue to prove effective. In fiscal year 1962 efforts directed toward the epidemiological investigation of tuberculous animals were found to be extremely productive as compared with routine area testing. The tracing to herds of origin of cattle found to be tuberculous at time of slaughter permits concerted activities on infected herds. While traceback activities involved testing of less than 1% of total cattle tested in fiscal year 1962, 23% of the reactor animals were located through this procedure. Bovine tuberculosis is still found throughout the Nation as illustrated in Figure 12.

As an example of the procedure, a herd in Louisiana was located as the origin of several animals found to be tuberculous on examination by the Meat Inspection Service. By tracing animals from this herd, 16 exposed herds in 7 states were located. Without this epidemiological approach, these herds could have developed tuberculosis and remained undetected for an indefinite period of time. Efforts are being made to improve market cattle identification through slaughter at accredited establishments to further strengthen the eradication program.

- b. "Red flag" herds further reduced. Those herds in which retests repeatedly disclose reactors with gross lesions of bovine tuberculosis at slaughter are designated as "red flag" herds. In June 1960, there were a total of 239 such herds. By the end of fiscal year 1962, this number had been reduced to 50, thus eliminating many reservoirs of infection.

STATUS OF WITCHWEED



Prepared in Survey and Detection
Operations, PPC, ARS, USDA
October 31, 1962

TOTAL NUMBER OF ACRES INFESTED - 236,534

FIGURE 11

TB TRACEBACK ACTIVITIES

Animal Movements Reported

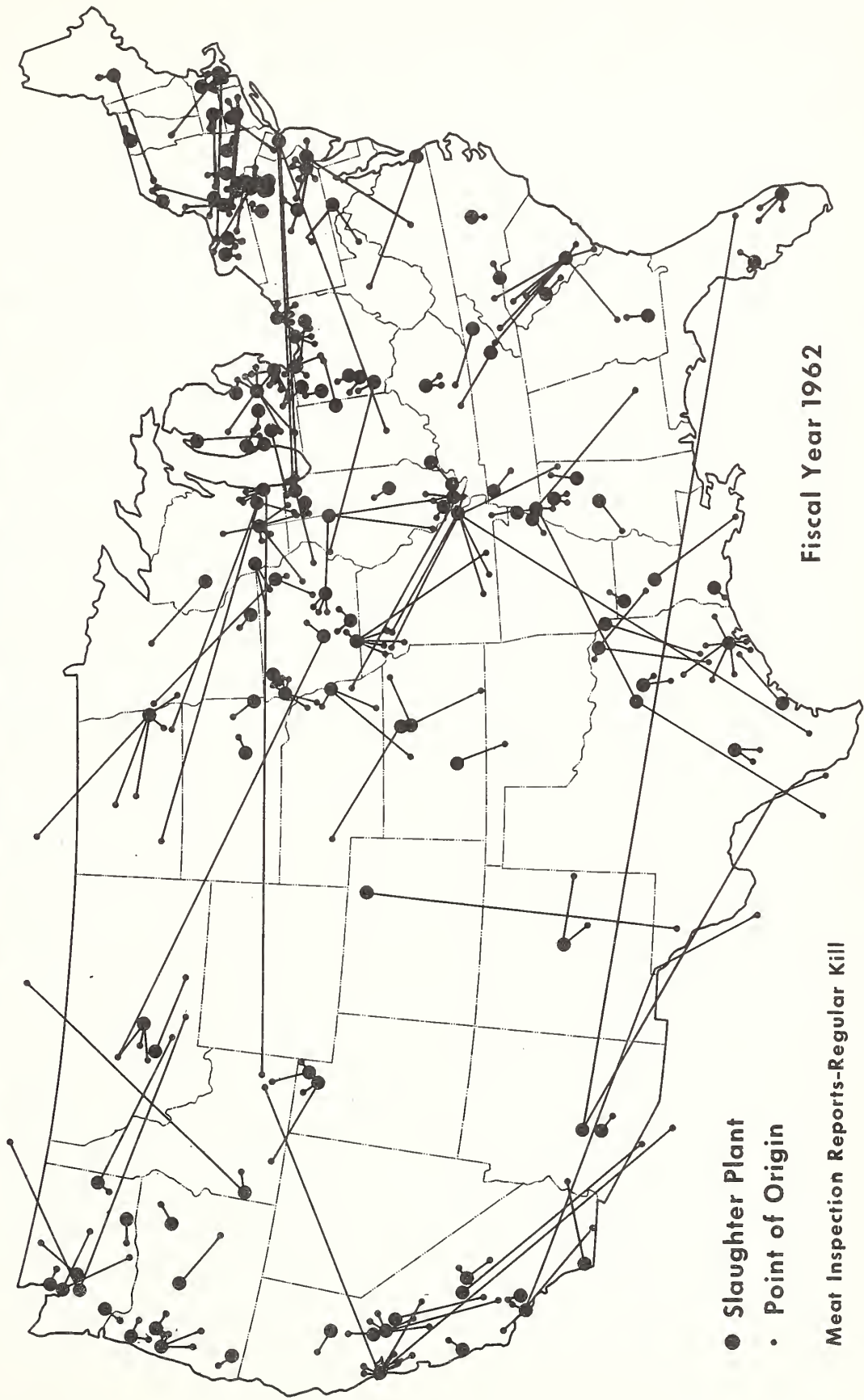


FIGURE 12

Tables 2 and 3 show the average State and Federal indemnity payments and other data pertaining to the program.

2. Brucellosis Eradication:

- a. Four more States attain modified-certified status. In fiscal year 1962, Arkansas, South Carolina, and Virginia were successful in completing statewide certification by reducing infection to not more than 1% of the cattle and 5% of the herds. California has attained this status also, in the current fiscal year. Eradication activities were being conducted on an area-wide basis in 5% more counties by the end of 1962 as compared to 1961. As of June 1962, only 488 of the Nation's 3,153 counties had yet to initiate the area eradication program. (See Figure 13). All modified-certified States and counties are continuing efforts to achieve the certified brucellosis-free status. To attain this status, all herds must have been tested and found free of the disease within 18 months of the date the area attains modified certified brucellosis status. In addition, brucellosis must not be known to exist in other species of domestic animals.

There follows a comparison of certification results during fiscal year 1961 and 1962:

	<u>F.Y. 1961</u>	<u>F.Y. 1962</u>
<u>Modified Certified Areas:</u>		
Counties:		
Certified during year (net increase)	248	190
Total certified at end of year <u>a/</u>	2,216	2,406
States (including Puerto Rico and Virgin Islands):		
Certified during year	2	3
Total certified at end of year <u>a/</u>	28	31
<u>Certified Brucellosis-Free Areas:</u>		
Counties:		
Certified during year	40	56
Total certified at end of year	62	118
States:		
Total certified at end of year	1	1
<u>a/</u> Includes Certified Brucellosis-Free Counties		

- b. Market cattle testing activities expanded. The testing of market cattle at livestock centers and slaughtering establishments expanded during the year to 1.8 million animal blood tests. (See Figure 14). Animals with positive reactions are traced to herds of origin for further testing to eliminate infection. The results of these tests are used for recertification of areas which eliminates much of the farm testing especially in range and semi-range areas. This

procedure takes advantage of industry practices of culling unhealthy animals for slaughter. Many infected breeding animals are also being detected at the livestock markets before they can spread the disease to other herds. During 1962, the total number of herd-lots blood tested increased by more than 16 percent over 1961 as a direct result of the market cattle testing program.

- c. Calfhood vaccination increases. In fiscal year 1962 a total of 6,740,344 calves were vaccinated in efforts designed to slow the spread of brucellosis and reduce the incidence. Unfortunately, vaccination does not confer a solid immunity against brucellosis and efforts to produce a vaccine which will give complete immunity have not been successful. So until brucellosis eradication is achieved, efforts will continue to vaccinate ever increasing numbers of calves to slow the spread of the disease.
- d. First area attains validated brucellosis-free status for swine. During 1962, Dooly County, Georgia, was established as the Nation's first validated brucellosis-free county. All breeding swine in the county were tested in this effort, and the disease eradicated from every herd found infected. The experience gained in this activity is serving as a guide to other areas embarking on an area program to eradicate swine brucellosis.

California is now engaged in a statewide effort to eradicate brucellosis in swine, and other states are planning to initiate area programs as soon as possible.

Figure 15 and tables 4 to 7 show other data relative to the brucellosis eradication program.

3. Scabies Eradication:

- a. Inspection and dipping activities increase. In fiscal year 1962, 12,771,677 sheep were inspected, for scabies, as compared to 12,031,249 in 1961 and 10,836,576 in 1960. A total of 591,231 required dipping to remove infection compared with 506,745 in 1961 and 390,958 in 1960. With the increased inspection and dipping work, scabies was reported in 767 flocks in 316 counties as compared with 872 flocks in 296 counties in 1961. (See table 8).
- b. More areas become free of sheep scabies. By November 1962, the number of scabies-free counties had increased to 1,772 as compared to 1,444 in August 1960 when the cooperative program was accelerated. In addition, 553 counties were designated as sheep scabies eradication areas in which systematic dipping and inspection activities are underway to eradicate the disease. The number of infected counties in which an eradication program has not yet been established has been reduced from 1,666 in August 1960 to 829 as of June 30, 1962. (See Figure 16).

STATEMENT OF COMPARATIVE TESTING, MODIFIED ACCREDITED AREAS
AVERAGE APPRAISAL, SALVAGE, AND STATE AND FEDERAL INDEMNITY IN TUBERCULOSIS ERADICATION WORK
FISCAL YEAR 1935 TO 1962 INCLUSIVE

(INDEMNITIES CALCULATED ON BASIS OF ACTUAL PAYMENTS AS OF JUNE 30 OF EACH FISCAL YEAR)

Fiscal Year	TESTS CONDUCTED		Reactors Found	Per- cent Infec- tion	Modi- fied Accred- ited Areas(a)	AVERAGE DURING YEAR			
	Herds	Cattle				Appraisal \$	Salvage \$	State Indemnity \$	Federal Indemnity \$
1935	2,378,668	25,237,532	376,623	1.5	2,428	57.55	15.19	15.87	18.70
1936	1,944,624	22,918,038	165,496	.7	2,921	77.66	26.50	10.18	22.44
1937	961,109	13,750,308	94,104	.7	3,030	86.04	28.94	12.20	22.72
1938	1,007,586	14,108,871	89,359	.6	3,124	86.76	32.16	16.41	18.12
1939	750,806	11,186,805	60,338	.5	3,142	99.01	34.49	18.96	15.97
1940	819,408	12,222,318	56,343	.46	3,148	91.05	37.12	20.44	16.20
1941	777,435	12,229,499	40,702	.3	3,151	96.50	40.99	20.95	16.48
1942	681,504	10,983,086	28,008	.26	3,151	109.69	50.35	21.49	16.55
1943	563,413	9,308,936	17,167	.18	3,151	135.19	65.03	27.50	18.75
1944	524,927	8,894,466	18,338	.2	3,151	154.53	59.93	36.07	21.72
1945	484,749	8,105,480	19,534	.24	3,151	161.32	59.78	40.31	22.71
1946	505,296	8,454,463	19,464	.23	3,150(b)	174.20	69.00	37.26	23.89
1947	515,517	8,312,919	16,666	.2	3,150	199.46	83.55	40.81	24.19
1948	523,924	8,294,423	15,943	.19	3,150	234.60	119.74	38.53	23.90
1949	536,162	8,737,501	17,007	.19	3,150	285.78	139.46	37.68	24.72
1950	539,799	9,439,811	17,733	.19	3,150	272.87	123.24	43.40	25.05
1951	503,933	8,847,228	12,353	.14	3,149(c)	323.70	174.64	43.59	24.92
1952	488,769	9,164,265	10,351	.11	3,149	346.13	174.05	46.15	25.66
1953	463,159	9,675,245	10,811	.11	3,149	309.47	117.31	49.22	26.12
1954	478,975	10,234,665	10,886	.11	3,149	250.92	82.18	43.76	26.60
1955	417,683	9,210,810	11,133	.12	3,149	235.10	77.63	45.24	25.28
1956	418,059	9,220,244	14,363	.15	3,148(b)	246.52	89.43	39.97	25.60
1957	414,162	8,976,409	13,974	.16	3,150(d)	255.69	94.06	38.44	25.78
1958	396,587	8,883,813	15,361	.17	3,150	301.81	133.27	36.65	26.13
1959	366,357	8,187,161	18,914	.23	3,148(b)	352.17	167.27	32.68	26.10
1960	393,334	9,439,706	14,149	.15	3,148	342.15	142.56	38.70	26.76
1961	399,810	9,788,386	14,579	.15	3,148	340.28	132.90	42.02	26.66
1962	379,692	9,219,298	10,940	.12	3,149(d)	329.40	128.03	43.00	26.44

- (a) Includes Puerto Rico and the Virgin Islands
 (b) Reduction is due to consolidation of Counties
 (c) Reduction is due to no cattle in District of Columbia
 (d) Increase is due to addition of new Counties

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
ANIMAL DISEASE ERADICATION DIVISION

SUMMARY OF BOVINE TUBERCULOSIS ERADICATION IN COOPERATION WITH THE VARIOUS STATES
FISCAL YEAR 1962

States	Herds Tested	Cattle Tested	Infected Premises	Percent Infected	Reactors Found	Percent Reactors
Alabama	505	25,675	1	0.2	1	0.01
Alaska	108	2,604	- -	0.0	- -	0.00
Arizona	985	32,996	17	1.7	100	0.30
Arkansas	2,382	62,962	11	0.5	66	0.10
California	14,329	635,099	297	2.1	853	0.13
Colorado	1,129	34,816	21	1.9	62	0.18
Connecticut	5,045	136,845	50	1.0	108	0.08
Delaware	1,597	41,113	6	0.4	9	0.02
Florida	2,543	238,305	36	1.4	118	0.05
Georgia	2,699	85,580	4	0.1	4	0.01
Hawaii	421	20,148	11	2.6	19	0.09
Idaho	1,439	37,153	6	0.4	15	0.04
Illinois	11,565	318,858	223	1.9	416	0.13
Indiana	16,214	229,639	149	0.9	234	0.10
Iowa	15,956	424,907	519	3.3	823	0.19
Kansas	6,362	168,030	61	1.0	255	0.15
Kentucky	5,138	80,264	48	0.9	114	0.14
Louisiana	845	37,941	18	2.1	47	0.12
Maine	4,033	86,695	4	0.1	8	0.01
Maryland	10,599	317,604	28	0.3	61	0.02
Massachusetts	6,605	144,778	39	0.6	78	0.05
Michigan	29,262	388,487	789	2.7	1,396	0.36
Minnesota	31,365	487,809	108	0.3	139	0.03
Mississippi	3,530	107,249	1	0.1	2	0.01
Missouri	7,929	198,465	32	0.4	69	0.03
Montana	978	30,595	11	1.1	20	0.07
Nebraska	3,171	93,181	72	2.3	133	0.14
Nevada	284	6,803	3	1.1	3	0.04
New Hampshire	4,425	83,462	3	0.1	4	0.01
New Jersey	6,637	192,330	188	2.8	358	0.19
New Mexico	579	17,900	7	1.2	20	0.11
New York	17,336	513,726	344	2.0	788	0.15
North Carolina	6,586	206,233	35	0.5	100	0.05
North Dakota	1,675	40,002	12	0.7	23	0.06
Ohio	27,760	432,576	342	1.2	497	0.11
Oklahoma	3,589	114,861	68	1.9	188	0.16
Oregon	6,824	92,979	84	1.2	145	0.15
Pennsylvania	35,274	774,428	488	1.4	1,201	0.16
Rhode Island	1,384	18,483	16	1.2	19	0.10
South Carolina	2,227	61,210	- -	0.0	- -	0.00
South Dakota	4,156	168,946	36	0.9	54	0.03
Tennessee	2,951	86,127	59	2.0	106	0.12
Texas	13,691	325,382	205	1.5	766	0.24
Utah	3,467	44,198	96	2.8	154	0.35
Vermont	4,632	152,687	28	0.6	44	0.03
Virginia	7,917	275,506	41	0.5	110	0.04
Washington	2,093	42,087	31	1.5	67	0.16
West Virginia	1,591	52,201	6	0.4	8	0.02
Wisconsin	33,503	995,703	344	1.0	954	0.10
Wyoming	475	10,561	4	0.8	8	0.08
Puerto Rico	3,877	42,187	13	0.3	173	0.41
Virgin Islands	25	922	- -	0.0	- -	0.00
Total	379,692	9,219,298	5,015	1.3	10,940	0.12

TABLE 3

Cooperative State-Federal BRUCELLOSIS ERADICATION PROGRAM

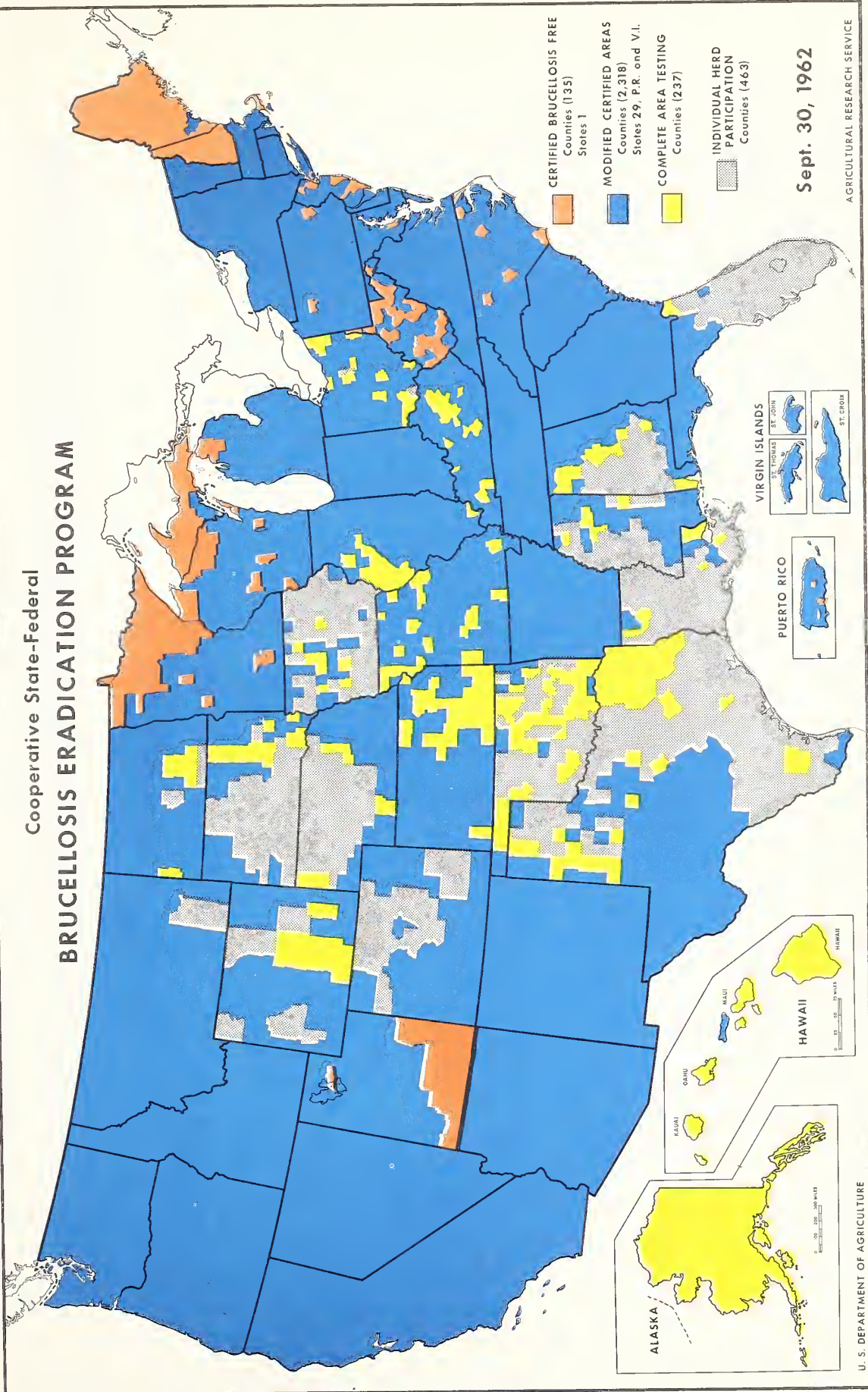
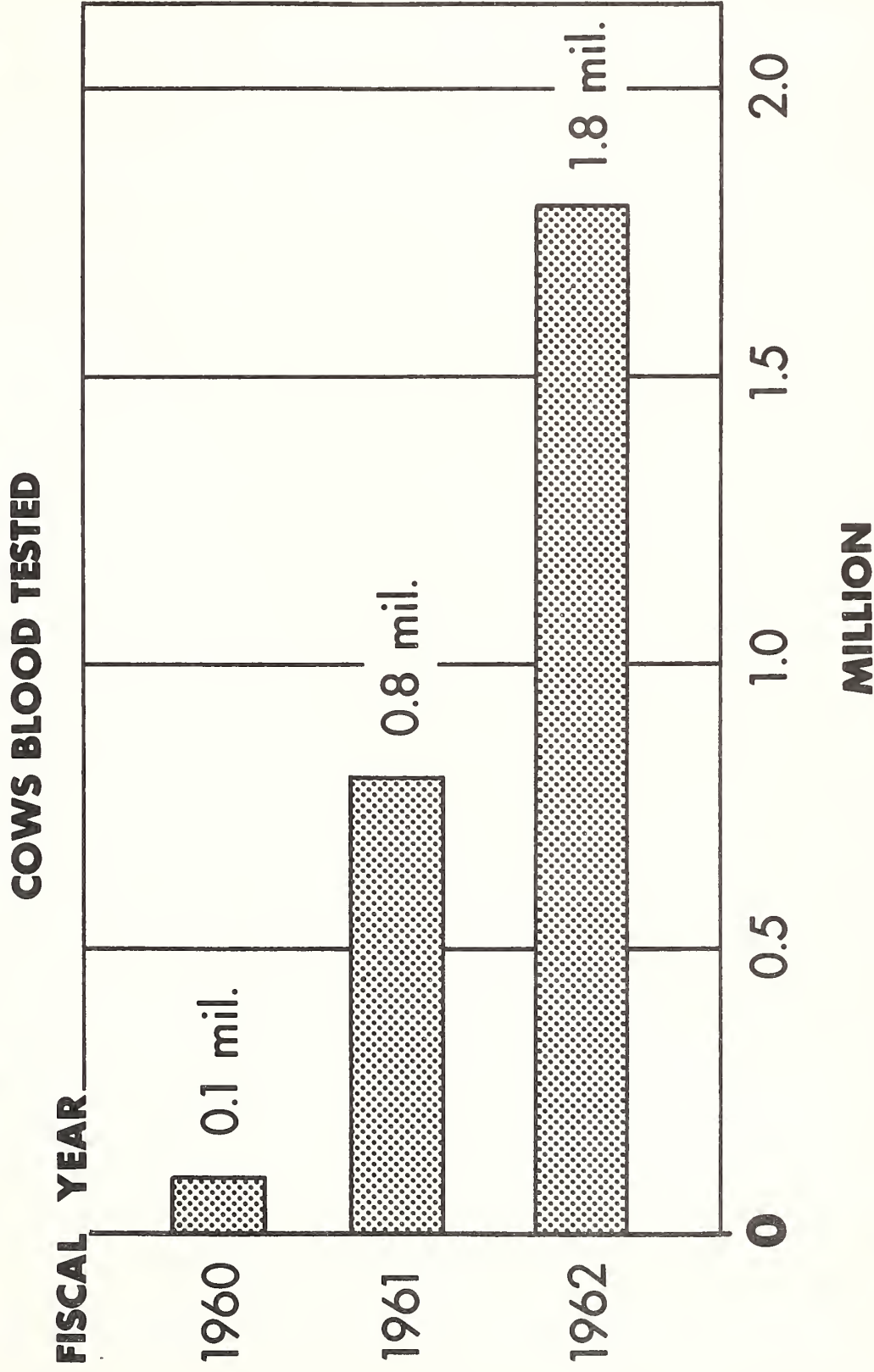


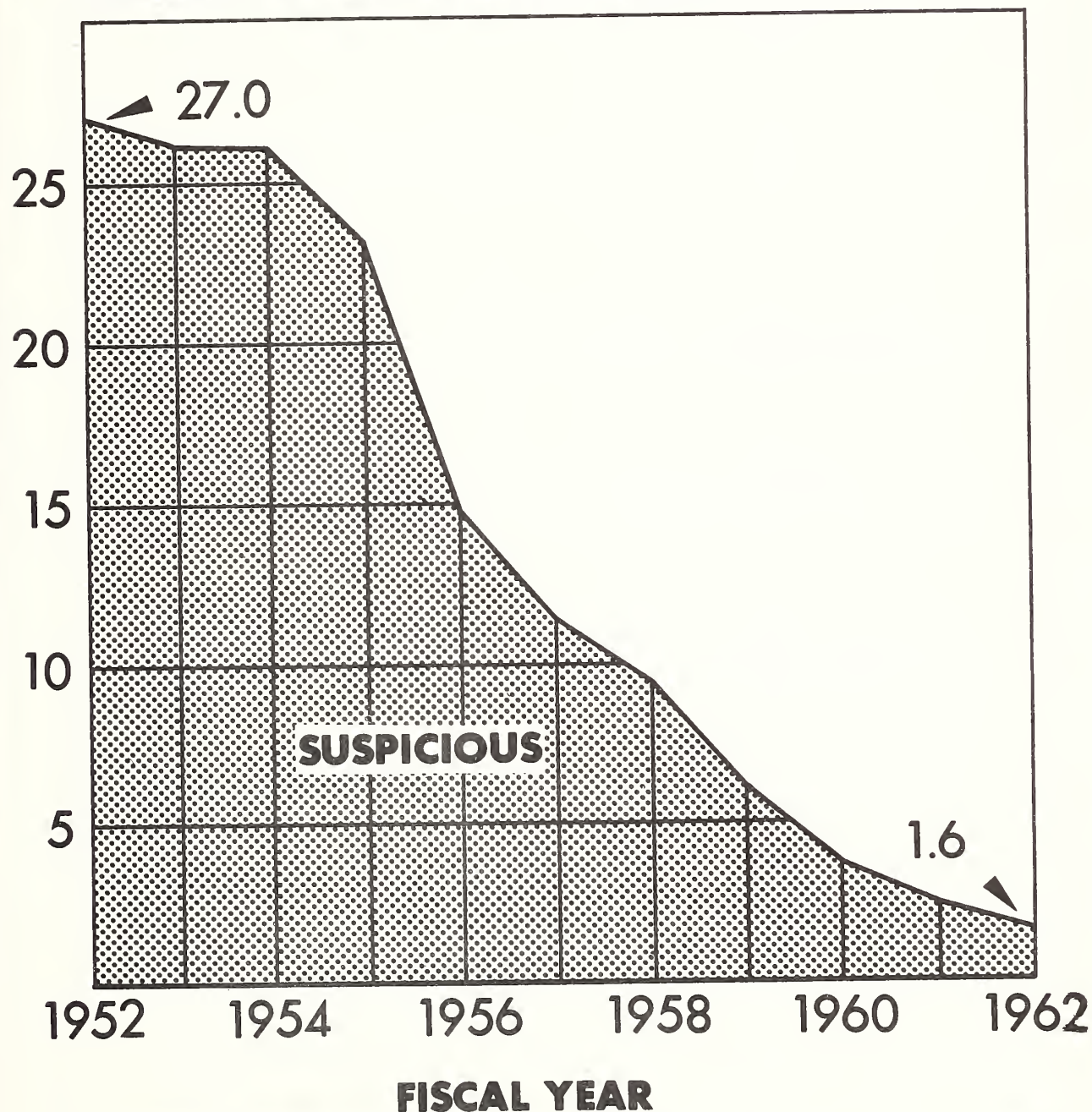
FIGURE 13

MARKET CATTLE TESTING PROGRAM



MILK RING TESTING: HERDS

PERCENT OF TOTAL HERD TESTS



(TOTAL COMMERCIAL DAIRY HERDS IN U. S., 1962 = 721,104)

AVERAGE APPRAISAL, SALVAGE, AND INDEMNITIES IN BRUCELLOSIS ERADICATION WORK

FISCAL YEAR 1935 THROUGH 1962

(INDEMNITIES CALCULATED ON BASIS OF ACTUAL PAYMENTS AS OF JUNE 30 OF EACH FISCAL YEAR)

Fiscal Year	Reactors on Which Indemnity Was Paid	Percent Purebred Cattle	INDEMNITY PAID BY									
			Federal					State				
			Average Appraisal	Average Salvage	No. of States in which Paid	Average Amount	No. of States Paying Indemnity	Average Amount	No. of States Paying Indemnity	Average Amount		
1935	Figures not available	18.0	\$ 56.86	\$ 19.87	Figures not available	\$ 24.29	1		\$ 27.99			
1936	439,041	11.0	70.65	27.44	48	26.86	2		20.57			
1937	352,092	9.0	70.67	27.94	48(a)	26.45	5		19.25			
1938	278,619	9.0	80.37	32.07	47(a)	26.69	10		20.36			
1939	182,285	9.0	97.17	33.97	47	20.00	28		26.09			
1940	119,660	11.0	90.85	34.99	36	14.96	36		17.12			
1941	129,225	10.0	93.28	37.68	39	15.19	39		17.19			
1942	127,274	9.0	99.19	52.06	41	15.83	41		17.71			
1943	91,065	10.0	128.03	64.87	39(a)	16.77	39(a)		18.63			
1944	81,677	10.0	143.34	59.75	40(a)	19.30	40(a)		22.54			
1945	89,766	10.0	139.35	56.63	39(a)	19.25	39(a)		22.14			
1946	82,586	10.0	149.65	68.64	39(a)	19.34	39(a)		22.07			
1947	62,115	11.0	178.25	82.93	40(a)	20.64	40(a)		23.44			
1948	51,111	11.0	203.98	107.38	39(a)	21.17	39(a)		24.44			
1949	43,237	11.0	256.46	132.11	37(a)	23.41	37(a)		25.67			
1950	34,759	11.0	237.68	114.21	31(a)	22.75	31(a)		25.16			
1951	21,079	11.0	285.16	164.52	27(a)	21.74	27(a)		24.27			
1952	29,322	8.0	334.68	189.39	25(a)	24.05	25(a)		26.03			
1953	23,456	8.0	276.52	122.52	24(a)	22.32	24(a)		25.59			
1954	39,485	6.0	190.90	89.18	25(a)	11.71	25(a)		20.64			
1955	139,159	5.0	189.36	87.38	41(a)	20.65	41(a)		20.85			
1956	231,687	4.9	203.63	84.58	40(b)	23.21	40(b)		22.33			
1957	166,737	5.3	201.29	84.98	43(a)	22.29	43(a)		19.64			
1958	146,843	5.6	233.48	113.19	44(c)	22.12	44(c)		19.58			
1959	94,836	6.0	288.50	148.94	45(d)	21.74	45(d)		21.79			
1960	65,158	5.9	282.62	129.40	46(e)	21.84	46(e)		22.86			
1961	66,670	5.4	274.80	123.03	42(a)	22.55	42(a)		26.92			
1962	61,484	5.4	265.03	118.80	40(f)	22.70	40(f)		20.33			

- (a) Plus Puerto Rico
 (b) Plus Puerto Rico and Alaska
 (c) Plus Puerto Rico, Alaska, Hawaii, and Virgin Islands
 (d) Plus Puerto Rico, Hawaii and Virgin Islands
 (e) Plus Puerto Rico and Virgin Islands
 (f) Plus Puerto Rico and Hawaii

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
ANIMAL DISEASE ERADICATION DIVISION

SUMMARY OF BOVINE BRUCELLOSIS ERADICATION ACTIVITIES IN COOPERATION WITH THE STATES

FISCAL YEAR 1962

State or Territory	BRUCELLOSIS BLOOD TESTS								BRUCELLOSIS RING TESTS - HERDS			CALVES VACCINATED
	Herds and Lots	Cattle	Infected Herds - Lots			Reactors			Total	Suspicious		
			Number	Percent	Percent	Number	Percent	Percent		Number	Percent	
Alabama	21,377	313,648	2,710	12.7	12.1	6,834	2.18	1.88	3,517	182	5.2	101,839
Alaska	61	357	0	0.0	0.0	0	0.00	0.00	64	0	0.0	190
Arizona	1,420	28,897	73	5.1	4.2	117	0.40	0.19	986	48	4.9	13,999
Arkansas	75,527	314,004	3,030	4.0	3.6	5,789	1.84	1.15	19,212	397	2.1	150,610
California	8,662	338,880	915	10.6	5.7	2,552	0.75	0.23	15,957	1,060	6.6	387,245
Colorado	9,251	118,236	342	3.7	2.6	839	0.71	0.51	7,767	256	3.3	114,616
Connecticut	4,760	43,301	67	1.4	1.0	88	0.20	0.11	9,446	201	2.2	19,538
Delaware	1,860	34,763	46	2.5	1.8	76	0.22	0.15	2,009	21	1.0	5,230
Florida	11,509	290,566	1,697	14.7	13.3	6,413	2.21	1.46	4,783	1,166	24.4	115,025
Georgia	173,485	367,287	2,148	1.2	1.2	4,162	1.13	0.85	9,382	437	4.7	74,098
Hawaii	2,023	40,586	149	7.4	7.2	432	1.06	0.85	167	21	12.6	4,202
Idaho	7,032	92,399	222	3.2	1.2	511	0.55	0.19	35,435	283	0.8	172,371
Illinois	38,734	369,073	1,511	3.9	2.2	3,397	0.92	0.51	61,740	402	0.7	142,267
Indiana	39,036	227,743	948	2.4	1.4	1,619	0.71	0.19	56,268	479	0.9	87,515
Iowa	51,799	294,904	1,639	3.2	1.4	3,508	1.19	0.28	141,365	2,834	2.0	237,557
Kansas	38,894	681,517	3,873	10.0	6.6	9,640	1.41	0.89	44,041	1,233	3.0	396,983
Kentucky	72,080	422,718	3,102	4.3	3.0	5,970	1.41	0.98	67,482	2,204	3.3	126,989
Louisiana	53,828	354,488	5,421	10.1	9.6	9,886	2.79	2.11	5,585	401	7.2	136,779
Maine	4,670	49,328	50	1.1	0.6	58	0.12	0.04	9,178	32	0.3	21,268
Maryland	11,610	252,622	177	1.5	1.0	296	0.12	0.08	12,539	212	1.7	54,110
Massachusetts	3,383	51,772	226	6.7	4.1	412	0.80	0.44	6,569	179	2.7	17,825
Michigan	27,853	225,985	1,419	5.1	2.5	2,794	1.24	0.39	91,949	1,786	1.9	104,554
Minnesota	11,022	726,077	1,434	3.5	1.3	3,004	0.41	0.14	278,901	1,217	0.4	212,571
Mississippi	120,503	287,942	4,252	3.5	3.3	7,938	2.76	1.53	18,358	803	4.4	115,483
Missouri	49,734	686,110	2,255	4.5	2.8	4,730	0.69	0.46	91,894	1,122	1.2	307,026
Montana	17,280	99,145	244	1.4	1.1	346	0.35	0.25	7,947	47	0.6	209,472
Nebraska	24,285	284,798	883	3.6	1.8	2,047	0.72	0.36	52,366	267	0.5	336,087
Nevada	1,426	19,351	16	1.1	1.0	51	0.26	0.18	571	7	1.2	57,767
New Hampshire	5,022	60,350	13	0.3	0.2	14	0.02	0.01	4,910	10	0.2	13,244
New Jersey	6,984	115,083	184	2.6	1.9	297	0.26	0.14	7,610	131	1.7	15,521
New Mexico	14,577	44,579	88	0.6	0.6	255	0.57	0.53	1,758	17	1.0	34,969
New York	11,680	158,606	1,076	9.2	2.0	1,636	1.03	0.18	82,676	425	0.5	302,556
North Carolina	18,685	285,102	265	1.4	1.0	655	0.23	0.13	22,307	81	0.4	17,109
North Dakota	14,920	252,624	843	5.7	2.7	2,273	0.90	0.48	15,901	139	0.9	219,262
Ohio	30,210	275,092	1,503	5.0	2.2	3,406	1.24	0.42	75,619	1,936	2.6	99,787
Oklahoma	24,129	344,200	3,794	15.7	13.2	9,380	2.58	2.17	9,712	531	5.5	158,277
Oregon	38,322	156,583	472	1.2	1.1	900	0.57	0.31	20,105	467	2.3	162,800
Pennsylvania	42,282	624,117	583	1.4	0.8	1,091	0.17	0.07	67,640	261	0.4	154,218
Rhode Island	1,262	10,116	21	1.7	1.3	27	0.27	0.17	1,250	22	1.8	1,969
South Carolina	12,608	158,043	348	2.8	2.5	751	0.48	0.41	3,426	29	0.8	25,320
South Dakota	20,319	317,252	1,161	5.7	3.0	2,640	0.83	0.39	36,421	766	2.1	265,255
Tennessee	142,549	222,070	2,701	1.9	1.6	4,298	1.94	0.86	52,661	1,640	3.1	183,933
Texas	39,127	497,607	4,329	11.1	9.6	9,688	1.95	1.43	13,331	1,402	10.5	321,699
Utah	11,748	52,528	151	1.3	0.9	233	0.44	0.12	17,285	99	0.6	67,819
Vermont	3,170	68,481	223	7.0	2.2	448	0.65	0.15	20,572	211	1.0	59,063
Virginia	51,257	435,657	1,005	2.0	1.8	1,858	0.43	0.38	12,177	321	2.6	103,084
Washington	76,056	166,446	246	0.3	0.3	382	0.23	0.14	15,036	178	1.2	142,747
West Virginia	13,772	169,289	201	1.5	1.2	392	0.23	0.20	6,767	68	1.0	10,252
Wisconsin	35,903	312,344	725	2.0	0.6	1,191	0.38	0.05	179,262	863	0.5	528,458
Wyoming	2,571	46,975	79	3.1	1.8	139	0.30	0.19	3,531	10	0.3	110,084
Puerto Rico	21,400	156,088	710	3.3	3.2	1,375	0.88	0.70	2,598	258	9.9	19,702
Virgin Islands	23	595	1	4.3	4.3	1	0.17	0.17	-	-	-	-
TOTALS	1,551,680	11,966,324	59,571	3.8	2.6	126,839	1.06	0.49	1,724,733	27,152	1.6	6,740,344

* Percent of herd and cattle blood tests only
** Percent of herd and cattle infection calculated
on the basis of total blood tests and actual
number of individual BRT negative herds in each
State, and the number of cattle in these herds.

STATEMENT OF COOPERATIVE BRUCELLOSIS TESTING
FISCAL YEARS 1935 to 1962 INCLUSIVE

Fiscal Year	BLOOD TESTS				BRUCELLOSIS RING TESTS-HERDS		
	Herds and Lots	Cattle	Reactors		Herd Tests	Suspicious	
			Number	Percent		Number	Percent
1935	212,482	3,317,760	381,010	11.5			
1936	470,788	6,674,709	457,104	6.8			
1937	630,917	8,021,167	397,864	5.0			
1938	671,310	7,837,443	324,532	4.1			
1939	724,613	7,591,398	219,165	2.9			
1940	590,393	6,937,428	171,953	2.5			
1941	677,544	7,465,254	182,075	2.4			
1942	591,835	6,891,219	209,238	3.0			
1943	392,636	5,185,228	197,329	3.8			
1944	386,266	5,235,912	226,079	4.3			
1945	395,236	5,213,458	243,050	4.7			
1946	389,814	4,876,866	245,786	5.0			
1947	454,789	5,133,814	232,293	4.5			
1948	533,936	5,434,792	232,199	4.3			
1949	563,501	5,671,347	226,691	4.0			
1950	618,801	5,974,721	208,298	3.5	Became Official Part of Program Fiscal Year 1952		
1951	565,155	5,640,836	172,322	3.1			
1952	670,738	7,491,327	314,260	4.2	503,759	135,967	27.0
1953	660,344	7,860,870	268,348	3.4	670,532	175,909	26.2
1954	696,207	9,002,109	235,666	2.6	932,003	242,914	26.1
1955	984,541	14,186,241	365,247	2.6	1,200,898	278,847	23.2
1956	1,154,962	16,754,195	366,524	*1.25	1,727,581	255,503	14.8
1957	1,170,906	15,913,396	280,253	**0.96	1,866,444	212,580	11.4
1958	1,176,601	16,251,440	260,322	**0.88	1,750,510	164,224	9.4
1959	984,576	14,168,909	214,331	**0.77	1,696,920	103,987	6.1
1960	1,185,562	12,468,476	147,805	**0.56	1,593,642	58,457	3.7
1961	1,332,651	13,418,657	139,894	**0.46	1,744,525	42,048	2.4
1962	1,551,680	11,966,324	126,839	***0.49	1,724,733	27,152	1.6

* Percent of infection in States conducting Brucellosis Ring Tests calculated on basis of total blood tests and total BRT negative tests for the last six months.

** Percent of infection in States conducting Brucellosis Ring Tests calculated on basis of total blood tests and $\frac{1}{2}$ of total BRT negative tests for Fiscal years 1957, 1958, 1959, 1960 and 1961.

***Percent of herd and cattle infection calculated on the basis of total blood tests and actual number of individual BRT negative herds in each State, and the number of cattle in these herds.

Brucellosis Eradication

Fiscal Year 1962

State	FEDERAL			COOPERATORS		
	Indemnity Payments	Operating Cost	Total	Indemnity Payments	Operating Cost	Total
Alabama	\$ 141,547	\$ 420,887	\$ 562,434	- -	\$ 303,844	\$ 303,844
Alaska	- -	25,843	25,843	\$ 100	2,500	2,600
Arizona	2,925	151,475	154,400	2,925	133,823	136,748
Arkansas	90,000	544,489	634,489	- -	370,607	370,607
California	67,655	590,630	658,285	125,683	742,427	868,110
Colorado	- -	257,066	257,066	9,962	275,533	285,495
Connecticut	2,216	67,238	69,454	9,034	94,331	103,365
Delaware	1,748	31,109	32,857	1,636	32,021	33,657
Florida	3,897	445,526	449,423	14,705	425,645	440,350
Georgia	47,064	516,878	563,942	57,430	539,045	596,475
Hawaii	7,122	55,332	62,454	11,282	131,575	142,857
Idaho	8,946	359,493	368,439	4,331	300,273	304,604
Illinois	79,948	366,583	446,531	58,630	664,915	723,545
Indiana	36,124	278,299	314,423	- -	643,830	643,830
Iowa	- -	601,467	601,467	- -	763,317	763,317
Kansas	222,774	540,986	763,760	- -	680,132	680,132
Kentucky	99,819	507,878	607,697	1,050	656,864	657,914
Louisiana	137,704	450,282	587,986	28,154	457,355	485,509
Maine	1,425	100,425	101,850	1,450	73,002	74,452
Maryland	6,698	211,794	218,492	6,543	317,218	323,761
Massachusetts	9,281	161,854	171,135	9,000	89,860	98,860
Michigan	73,193	424,489	497,682	- -	607,446	607,446
Minnesota	11,339	498,024	509,363	6,070	882,643	888,713
Mississippi	86,299	422,114	508,413	- -	354,559	354,559
Missouri	46,894	482,200	529,094	46,894	921,680	968,574
Montana	- -	195,329	195,329	- -	253,645	253,645
Nebraska	16,214	468,674	484,888	9,471	428,979	438,450
Nevada	1,209	172,719	173,928	- -	104,788	104,788
New Hampshire	205	40,772	40,977	317	60,405	60,722
New Jersey	7,499	127,240	134,739	21,413	139,513	160,926
New Mexico	4,720	196,234	200,954	929	51,070	51,999
New York	- -	229,481	229,481	- -	969,175	969,175
North Carolina	14,569	225,134	239,703	6,300	263,564	269,864
North Dakota	15,005	257,773	272,778	- -	335,457	335,457
Ohio	- -	244,111	244,111	- -	542,076	542,076
Oklahoma	116,168	414,344	530,512	- -	368,169	368,169
Oregon	4,782	288,218	293,000	3,672	222,519	226,191
Pennsylvania	25,310	275,027	300,337	32,675	1,190,000	1,222,675
Rhode Island	175	23,880	24,055	1,824	30,979	32,803
South Carolina	19,129	245,320	264,449	18,987	190,331	209,318
South Dakota	26,752	355,906	382,658	23,674	441,975	465,649
Tennessee	73,826	598,153	671,979	- -	490,714	490,714
Texas	- -	747,548	747,548	- -	903,296	903,296
Utah	- -	234,820	234,820	- -	116,713	116,713
Vermont	9,957	130,634	140,591	9,991	89,736	99,727
Virginia	43,596	398,453	442,049	- -	541,694	541,694
Washington	- -	418,830	418,830	5,889	276,427	282,316
West Virginia	4,653	203,005	207,658	7,461	155,964	163,425
Wisconsin	38,898	564,362	603,260	39,939	926,806	966,745
Wyoming	990	174,041	175,031	- -	193,500	193,500
D.C. and Regional Business Offices	- -	1,773,498	1,773,498	- -	- -	- -
Puerto Rico	33,168	133,858	167,026	30,577	79,990	110,567
TOTALS	1,641,443	17,649,725	19,291,168	607,998	19,831,930	20,439,928

TABLE 7

PSOROPTIC SHEEP SCABIES

As Reported From Respective States	Number of Infected Counties	Number of Infected Flocks	Number of Infected Sheep	Total Inspections	Total Dippings
Alabama	0	0	0	2,780	0
Alaska	0	0	0	6,000	0
Arizona	0	0	0	409,828	38,732
Arkansas	0	0	0	78,540	4,433
California	4	3	1,459	1,421,922	10,271
Colorado	0	0	0	313,707	8,004
Connecticut	0	0	0	153	0
Delaware	0	0	0	2,439	0
Florida	0	0	0	2,528	0
Georgia	0	0	0	1,570	0
Hawaii	1	1	5,500	6,592	16
Idaho	0	0	0	1,501,634	0
Illinois	75	286	11,996	593,902	168,999
Indiana	26	35	3,820	41,620	8,660
Iowa	56	147	11,432	62,942	17,587
Kansas	1	1	85	399,627	383
Kentucky	2	2	64	108,506	576
Louisiana	0	0	0	134,915	21,128
Maine	0	0	0	0	0
Maryland	3	5	184	4,457	368
Massachusetts	0	0	0	4,863	0
Michigan	1	2	256	166,791	11,335
Minnesota	19	29	2,324	1,313	2,128
Mississippi	1	3	196	19,551	464
Missouri	22	45	3,820	7,415	4,324
Montana	0	0	0	16,111	0
Nebraska	12	28	2,553	185,464	27,123
Nevada	0	0	0	62,987	0
New Hampshire	0	0	0	0	0
New Jersey	5	12	408	38,305	937
New Mexico	9	13	6,741	1,534,139	158,543
New York	3	4	105	190,534	481
North Carolina	0	0	0	3,547	0
North Dakota	1	1	114	408,146	216
Ohio	23	57	4,877	8,316	5,165
Oklahoma	1	1	300	9,667	1,470
Oregon	0	0	0	9,262	0
Pennsylvania	21	43	1,341	239,177	3,648
Rhode Island	0	0	0	1,739	0
South Carolina	0	0	0	875	0
South Dakota	2	3	1,173	1,305,098	4,464
Tennessee	12	27	1,443	131,010	4,906
Texas	0	0	0	2,869,933	81,549
Utah	0	0	0	62,994	0
Vermont	0	0	0	7,119	0
Virginia	9	11	1,164	3,145	1,104
Washington	0	0	0	53,749	0
West Virginia	1	1	35	2,920	108
Wisconsin	6	7	861	264,456	4,109
Wyoming	0	0	0	69,389	0
Puerto Rico	0	0	0	0	0
Virgin Islands	0	0	0	0	0
TOTALS:	316	767	62,251	12,771,677	591,231

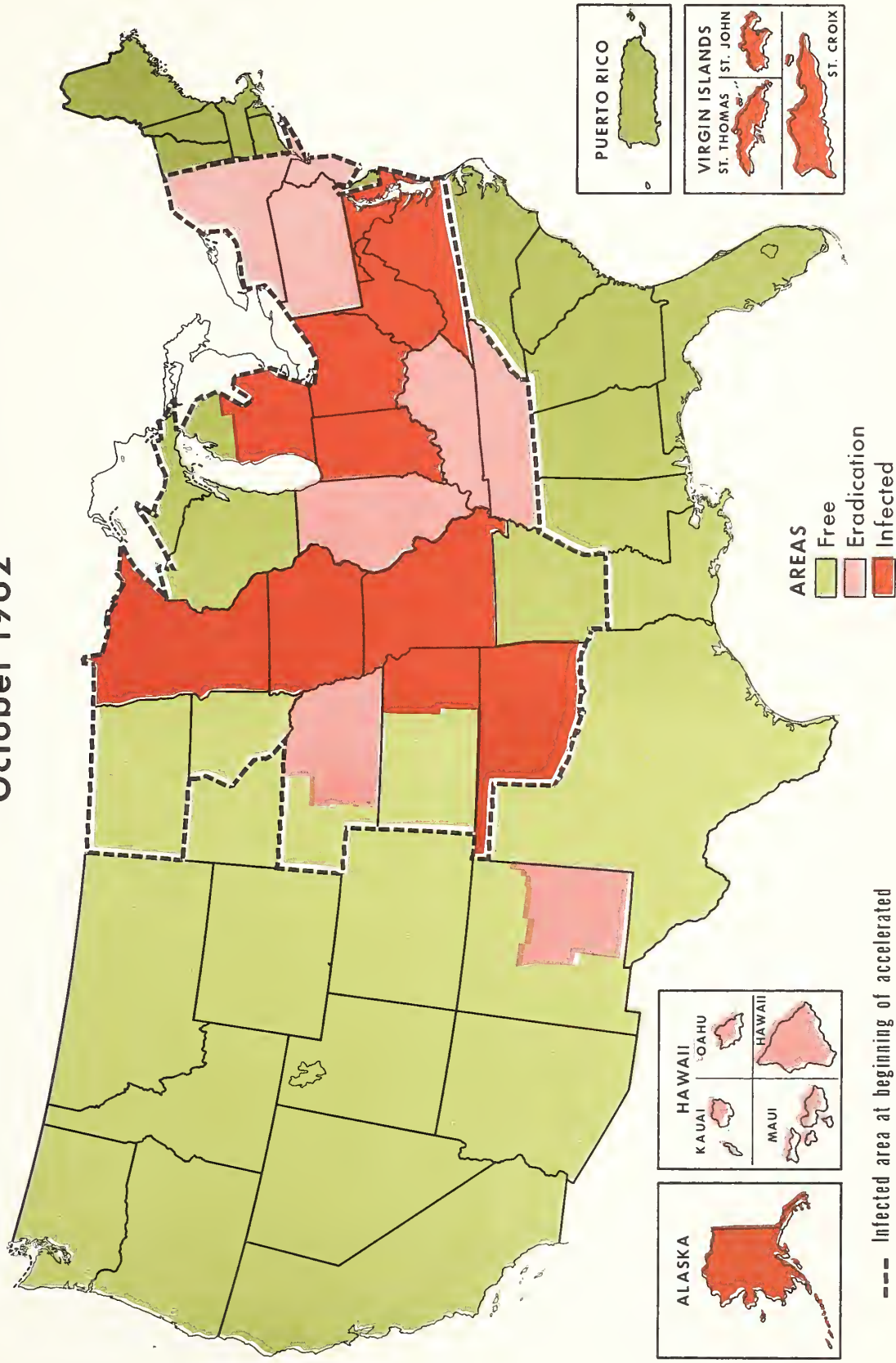
Goats inspected in Alabama 98; Arizona 902; Arkansas 3,332; California 356; Kansas 74; Mississippi 47; Missouri 150; North Carolina 23; Oklahoma 400; Oregon 25; South Dakota 6; Texas 57,195; Utah 1,580; Washington 5. Total: 64,193

Goats dipped in Alabama 28; Arkansas 1,995; California 297; Oregon 100; Texas 811.
Total: 3,231

TABLE 8

SHEEP SCABIES ERADICATION

October 1962



In fiscal year 1962, a cooperative procedure was tried out for the first time in Wisconsin which greatly accelerated the eradication effort there. This involved acceleration of standard eradication tools and procedures to the point where all flocks of sheep (approximately 8,000) were inspected during a period of one month. The program was preceded by an excellent public information effort including marshalling and training of approximately 300 Federal and State employees to make the necessary inspections. The effort was so successful that Wisconsin has been designated a scabies-free area during the current fiscal year.

Also, eradication work has been completed in the remaining eastern South Dakota counties and the entire State has been added to the list of scabies-free areas.

- c. Fewer outbreaks of psoroptic cattle scabies found. During fiscal year 1962, four infected herds were found in three States as compared to 10 infected herds in five States in 1961, four herds in 4 States during fiscal year 1960, and 27 infected herds during fiscal year 1959.

During the year, increased efforts were made to locate any additional evidence of the disease with a total of 8.2 million cattle inspected compared to 7.7 million the previous year. Due to fewer infected herds being located, the number of official dippings was reduced from 234,293 cattle to 123,500.

4. Cattle fever tick eradication:

Goals of the eradication program. Surveys in Florida indicate that 16 premises had been infested during fiscal year 1961. Systematic inspections and dippings of cattle and horses were completed but surveys to detect any additional tick infestation continued. Federal quarantines imposed during 1960 were removed as the eradication program progressed and the ticks were eliminated. By October 1961 all Federal quarantines had been lifted except one on "Africa, USA", a wild animal compound in Florida, because of an exotic tick infestation.

In March 1962, following successful eradication efforts, the remaining Federal quarantine was removed from "Africa, USA". This and similar quarantines had been placed in the latter part of 1960 due to the findings of exotic African ticks, Rhipicephalus evertsi (red tick) and R. pulchellus. The quarantines on portions of Hillsborough County in Florida and Greene County in New York, had been lifted in September 1961 following eradication of the tick. This represents the first known successful eradication effort to rid areas of these exotic ticks. This species of ticks is known to serve as vector of serious animal diseases not present in the United States.

Tick reinfestations in Texas occur regularly from stray animals entering the United States from Mexico. Counties along the Mexico-United States border are under surveillance by Department inspectors who continue to work diligently to reduce the introduction and dissemination of ticks into the United States.

5. Hog Cholera Eradication:

- a. Technical training conducted concerning the disease and its eradication. Technical development of the eradication program was advanced through the conduct of a symposium on hog cholera. This brought together animal disease officials from all over the country to discuss the disease and its eradication with leading authorities. The proceedings of this symposium were published and have been widely distributed to those who will be active in the cooperative eradication effort. In addition, special orientation in hog cholera diagnosis for selected State and Federal personnel from key areas of the country was provided through a series of intensive training courses held at the National Animal Disease Laboratory.
- b. Interstate regulations adapted. Federal interstate regulations necessary for the eradication program have been adapted and standards for operation of livestock markets have been established in cooperation with the States.

6. Screwworm Eradication:

- a. In the Southeast. During fiscal year 1962 several outbreaks occurred in the Southeast, threatening overwintering areas in the Florida region. Through prompt and vigorous action by Federal and State agencies, the outbreaks were eradicated.

A single screwworm infested animal brought into Southwest Georgia was quickly detected and reported by the owner on October 29, 1962. Release of sterile flies, along with other precautionary measures and inspections, are still in progress in the area. Since the screwworms were promptly destroyed and no further infestations have been found, it appears evident that the infested animal did not serve to re-establish screwworms in the Southeast.

It has been most encouraging that no native screwworms have been found in counties bordering the Mississippi River in the summer, fall and winter of 1962 in contrast to the numerous cases that have appeared in the area over the last several years. The absence of screwworms in the Arkansas and Louisiana side of the river has lessened the threat of screwworm invasion of the screwworm-free Southeast, since there has been no opportunity for flies to migrate across the inspection station line under their own wing power.

- b. Southwest screwworm eradication activities. In February 1962, a program was initiated to eliminate screwworms in Texas, New Mexico and States north and east of Texas as well as to determine the feasibility of an artificial barrier zone along the Mexican-United States border to prevent reinfestation from areas to the South. Permanent facilities at Mission, Texas, were constructed in record time and placed in operation during mid-June--months ahead of schedule. By mid-November, production capabilities had been

reached and over 75 million sterile flies had been produced in a week. This has made it possible to intensify eradication efforts in the fall of 1962 and take full advantage of weather conditions favorable to the program.

Screwworm detection, of great value in preventing the interstate spread of screwworms and essential to efficient use of measures for eradication of the insect, has been stepped up in recent months and much success has been achieved in enlisting the support of livestock owners in submitting information and specimens for the survey.

Screwworm populations in the area of Texas being treated with sterile screwworm flies have been reported to be substantially lower than in preceding years, particularly in southern counties where the pest would live through the winter each year.

Arrangements have been made with Mexico to permit the release of sterile flies 25 to 50 miles southwest of the border as part of the artificial barrier which is being developed to prevent reinfestation in the area in which eradication activities are in progress in the Southwest. Mexican inspectors are being provided by Mexico to work with United States inspectors along the border to determine the incidence and abundance of screwworms in and near the treated area of Mexico and to learn the effects of sterile fly release on the native screwworm population there.

7. Diagnosis, control and eradication of miscellaneous diseases.

- a. Scrapie outbreaks increase. During fiscal year 1962, thirteen scrapie infected flocks of sheep were found in five states as compared with nine infected flocks, in six states in fiscal year 1961. To prevent the spread of the disease, the cooperative eradication program provides for the slaughter of all infected and exposed animals. These efforts have minimized widespread occurrence of the disease as has occurred in other countries. By the end of the fiscal year, approximately 564,000 sheep in 1,200 flocks were under surveillance in 37 States as compared with 420,000 sheep in 1,334 flocks in 1961. There follows a comparison of Federal and Cooperators indemnities:

	<u>F.Y. 1961</u>	<u>F.Y. 1962</u>
Federal	\$123,192	\$426,806
Cooperators	82,692	87,473
Total	<u>205,884</u>	<u>514,279</u>

Considerable stress was placed upon epidemiological studies. Extensive epidemiological work was done following each outbreak to determine the source of infection and trace movements of all exposed sheep. Flocks established as disseminators of scrapie were slaughtered as were exposed sheep moved from either infected or source flocks and the immediate progeny of these animals.

- b. Special field trials and epidemiological studies undertaken on poultry diseases. In the State of Minnesota, cooperative efforts are being directed toward lowering the incidence of infectious sinusitis by conducting turkey-flock field inspections for visual evidence of disease and through serological testing of turkey blood serum with a specific antigen, developed and produced through Department research. Flocks found to be infected are not used as a source of hatching eggs. Field veterinarians observe the slaughtering of infected flocks to correlate data on the appearance of infected turkey flocks with lesions at slaughter.

In Virginia, poultry disease epidemiological work has aided the broiler improvement program. The epidemiology work includes field application of a killed Newcastle disease vaccine developed by USDA research. Federal and State field veterinarians apply the vaccine and inspect the flocks periodically for evidence of disease. Broiler flocks are observed at the time of slaughter to determine the efficacy of the vaccine to lower carcass condemnations due to airsacculitis.

Field veterinarians also conducted flock inspection and testing on poultry farms infected with avian leukosis, pleuropneumonia-like organism caused diseases, and Salmonellosis.

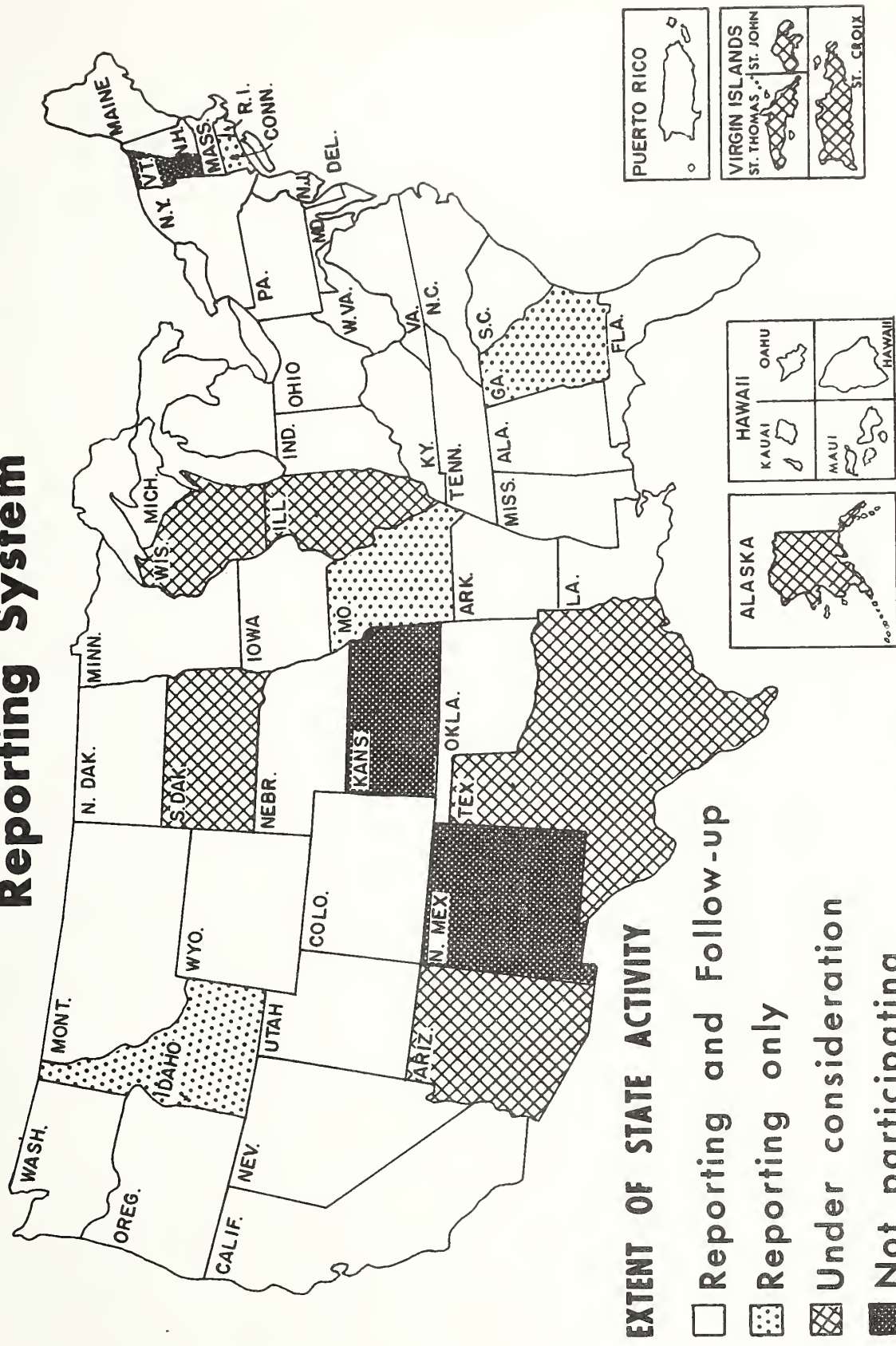
In Maine a specific pathogen-free poultry program is underway to rear commercial poultry free of Newcastle disease, infectious bronchitis, laryngotracheitis, pleuropneumonia-like organism caused infections, fowl typhoid, pullorum disease, paratyphoid, and fowl pox. This program is designed to produce poultry free of diseases, and greatly reduce the number of condemned at slaughter as unwholesome for human consumption. Such disease-free poultry products would be more acceptable in foreign markets. Many countries prohibit the importation of poultry from the United States because of one or more of these diseases. In addition, poultry reared under this program are yielding more meat per pound of feed.

In cooperation with 45 States and Puerto Rico, reports on pullorum disease and fowl typhoid are being assembled in order to more quickly identify foci of infection of these two diseases, followed by appropriate recommendations to owners involved in outbreaks for quick and economical elimination of the infection source. (See Figure 17).

- c. Foot-and-Mouth disease prevention in Mexico. Mexican animal disease eradication officials demonstrated an increased interest and concern over the possible introduction of devastating foreign animal diseases during fiscal year 1962. Two United States veterinarians stationed in Mexico assisted in the investigation of suspected incidence of foot-and-mouth disease reported by Mexican livestock owners. Representatives of an international animal health organization visiting Mexico during fiscal year 1962 were so impressed by the capability and cooperative activities of this small group that they are giving

PULLORUM DISEASE AND FOWL TYPHOID

Reporting System





increased attention to the dangers of animal disease introduction in the remaining Central American countries that are free of foot-and-mouth disease. They are leaning heavily on the experience and examples available from Mexico-United States Commission veterinarians in drawing up animal disease prevention and eradication policies for the Central American countries.

8. Supervision over Interstate Movement of Livestock.

- a. Animal health inspection at public stockyards and in marketing channels benefits livestock industry. It provides reliable and current knowledge of the health status of our nation's livestock through competent and continuous inspection of animals moving through interstate commerce. In addition, qualified inspection of intrastate livestock provides a built-in alarm system for quick warning of animal disease outbreaks when they occur.

In fiscal year 1962, over 59 million head of livestock were examined by qualified veterinarians and livestock inspectors. This includes over 20 million cattle, over 11 million sheep and over 26 million swine. The inspection service includes supervision of dipping (for scabies), testing for animal disease, and vaccination of swine and cattle.

In addition, increased efforts were directed toward animal identification and livestock disease "tracebacks" to farm or ranch of origin. This valuable information assists field personnel in screening animal diseases in marketing channels so that eradication efforts can be efficiently and effectively directed to herds with known disease problems.

- b. Screwworm inspection activities were continued along the Mississippi River to protect the screwworm-free Southeastern States. Almost one-half million eastbound animals were inspected and treated at permanent inspection stations during fiscal year 1962. This activity, in addition to timely animal inspection and vigilance over interstate movements at other points in the Southeast area, has served to keep the screwworm population from being re-established in the area freed of screwworms in the Southeast during 1959.

c. The following statistics show the comparative volume of activity at the public stockyards in the fiscal year 1961 and 1962:

	<u>FY 1961</u>	<u>FY 1962</u>
Number of stockyards operating	59	60
Number of cities in which located	57	56
Animals inspected:		
Cattle	21,334,686	20,438,908
Sheep	12,305,306	11,722,578
Swine	<u>26,625,273</u>	<u>26,871,106</u>
Total animals inspected	<u>60,265,265</u>	<u>59,032,592</u>
Animals dipped and immunized:		
Cattle dipped	46,005	42,197
Sheep dipped	350,399	303,196
Swine immunized	<u>123,811</u>	<u>133,774</u>
Total animals dipped and immunized ...	<u>520,215</u>	<u>479,167</u>
Health certificates issued for ship-		
ments	269,712	273,796
Infectious cars received	169	114
Cars cleaned and disinfected	1,544	746
Trucks cleaned and disinfected	21,723	31,626
Diseased animals received	391,449	477,218 a/

a/ Includes 48,882 brucellosis, 4,329 tuberculosis and 69 paratuberculosis reactors; 423,938 other diseased animals.

d. Need for enforcement of 28-Hour Law demonstrated. The 28-Hour Law seeks to insure the interstate transportation of livestock in a humane and safe manner as well as to prevent or minimize losses to shippers by safeguarding the health and condition of the animals while en route to market, farm, or ranch destinations. In enforcing this law, inspections at more than 600 feed, water and rest stations maintained by rail carriers within the continental United States are made to ensure that the facilities and equipment (livestock pens, etc.) are adequate and properly maintained. Unsatisfactory or dangerous conditions are brought to the attention of the railroads operating the facilities for correction. Railroad waybills and similar documents are checked by our inspectors to ascertain if the livestock are fed, watered, and rested within stipulated limits. During fiscal year 1962, inspectors reported 393 apparent violations of the 28-Hour Law. In the same period, results were received of 154 prosecutions, showing penalties imposed by Federal courts in the amount of \$17,400 and costs.

- e. Regulatory laws. Inspection for compliance with the Animal Quarantine laws is conducted throughout the country at highway and railroad points, stockyards and livestock centers. In fiscal year 1962, field inspectors reported 479 apparent violations of the Animal Quarantine Laws. Investigation of 266 such cases was completed in that period and sent to the Office of the General Counsel. Also during that period, notice was received of successful prosecution of 99 cases.

Animal Inspection and Quarantine

9. Inspection activities at ports-of-entry. During fiscal year 1962, careful inspection and quarantine of animals and poultry imported from many foreign countries and the safe handling of a large volume of commercial importations of animal products and related materials have prevented the entry and dissemination of destructive exotic diseases. Because of continually increasing world trade and travel, the risk of bringing in such diseases as foot-and-mouth disease, rinderpest, African swine fever, fowl pest and the vectors of many others is greater than at any other time. In addition to careful inspection, horses and equines offered for importation must be negative to tests for dourine and glanders.

In fiscal year 1962, a total of 3,190 serum samples from such animals were tested of which 26 were either positive or suspicious for dourine and 11 for glanders. Animals which do not meet the tests for freedom from these diseases are refused entry but may be considered at a later time provided the animal passes two consecutive negative tests.

In addition, a total of 647 stray or smuggled animals along the Canadian and Mexican borders were seized.

The following table reflects the number of animals and poultry presented for entry during fiscal year 1962.

Description	Inspections				Refused Entry
	Border Ports		Air and Ocean Ports	Total	
	Canadian	Mexican			
Animals:					
Cattle	558,812	711,916	142	1,270,870	64,953
Swine	7,225	23	0	7,248	2
Sheep	2,937	0	6	2,943	0
Goats	2,365	0	2	2,367	0
Horses	18,674	3,180	701	22,555	86
Mules	23	2	0	25	0
Burros	3	0	0	3	0
Zoo	217	0	109	326	5
Miscellaneous	116	0	11	127	0
Total Animals	590,372	715,121	971	a/ 1,306,464	65,046
Poultry	161,689	0	56,205	217,894	1,454
Hatching Eggs	231,698	0	125,467	357,165	18,483
Grand Total	983,759	715,121	182,643	1,881,523	84,983

a/ In addition, 2,388 animals (cattle, sheep, swine, goats) were inspected and passed for immediate slaughter into the U. S. Virgin Islands from the British Virgin Islands.

10. Zoo animals kept under permanent post-entry quarantines. Wild ruminants, such as deer, giraffes and antelopes are permitted entry for exhibition in zoological parks after meeting rigid import requirements. Such animals represent special disease hazards because they often come from countries where many exotic diseases are prevalent. To preclude the transmission of such diseases, these animals are maintained under quarantine while on exhibition in approved zoological parks having acceptable isolation, sanitation and management facilities. During the year, 62 wild ruminants were entered to 35 approved zoos, bringing to 257 the number of such animals now under permanent quarantine. Health records are kept by designated zoo veterinarians and post-mortem examinations are made on all animals.
11. Inspection of imported animal products and related materials. Each year, animal products are brought in from many foreign countries for agricultural, industrial, or pharmaceutical purposes. These products and related materials present a very real risk of foreign disease introduction. They are permitted entry only under regulations requiring careful inspection at ports of entry and are shipped to approved destination establishments where they are processed under supervision. Such importations in fiscal year 1962 included:

	<u>Million Pounds</u>
Hides and skins	317.1
Animal casings	20.1
Wool and hair	413.8
Bones and bone meal	130.7
Gluestock	30.5
Horse meat	25.5
Waste bagging material	64.5
Miscellaneous products	74.6
Total	<u>1,076.8</u>

With increased trade and travel there is corresponding risk of introducing the contagion of animal diseases through garbage on foreign ships and airplanes, and by meats and disease-producing agents in passenger baggage, in the mails and in express shipments. During the year, prohibited or restricted meats totaling 134,166 lbs. (37,422 lots) were seized and disposed of with prompt disinfection of cars, trucks, premises, etc. involved in handling the restricted products.

12. Inspection of livestock for export. During the year 8,433 animals were inspected and certified for export to 55 foreign countries, exclusive of Canada and Mexico. This work includes examinations of transporting vessels and aircraft to assure humane handling and safe transport.

13. Purebred animals certified for duty-free entry. To aid in the importation of animal breeding stocks, certified purebred animals are permitted duty-free entry. Inspectors at ports of entry identified and issued certifications as to purity of breeding as follows:

	<u>Fiscal Year</u>	
	<u>1961</u>	<u>1962</u>
Cattle	19,636	19,420
Horses	467	383
Sheep	174	300
Swine	49	62
Goats	- -	1
Dogs	621	697
Cats	1	1
Total	<u>20,948</u>	<u>20,864</u>

14. Licenses under the Virus-Serum-Toxin Act permitted the production of 133 different biological products as of June 30, 1962. Several products are manufactured in more than one form, so that the total number of biological products was 211. The total number of outlines of production processed during the year was 400. Labels and circulars for licensed biological products reviewed and processed during the fiscal year totaled 3,275 sets as compared with 2,753 sets in fiscal year 1961. There were 23 permits issued for importation of biological products and 225 for importation or transportation of organisms and vectors.

Activities in connection with veterinary biologics work are reflected in the following table:

	F.Y. 1961	F.Y. 1962
<u>Anti-hog cholera serum and hog-cholera virus:</u>		
Establishments (number)	20	22
Production (cc):		
Serum (completed product)	534,908,601	546,511,007
Virus:		
Simultaneous	4,618,360	3,906,971
Hyperimmunizing	90,761,087	95,881,500
Inoculating	347,569	460,547
Animal inspections	782,086	917,293
Tests supervised	4,249	5,285
<u>Hog-cholera vaccine:</u>		
Establishments (number)	22	22
Production (doses)	37,452,105	53,973,810
<u>Other veterinary biologics:</u>		
Establishments (number)	49	51
Production:		
cc	894,752,113	1,062,747,561
milligrams	618,162,768	307,122,003
units	530,794,000	626,314,975
bulk cc for export	3,990,864	1,002,240
<u>Products destroyed (all kinds):</u>		
cc	25,949,443	36,935,534
milligrams	12,020,478	8,649,925
units	- -	5,651,000
<u>Export Certificates Issued</u>	536	664

The following table shows the volume of biological products certified for export:

Products (and units)	F.Y. 1961	F.Y. 1962
	(thousands)	
Anti-hog-cholera serum (cc)	37,918	63,728
Other serums (cc)	645	1,401
Hog-cholera virus (cc)	874	880
Antitoxins (units)	1,806	1,290
Bacterins (doses)	1,735	3,826
Diagnostics (doses)	147	399
Vaccines (doses)	38,195	41,274

15. Veterinary biologics testing at National Animal Disease Laboratory, Ames, Iowa. During the year, considerable effort was devoted to staffing, obtaining and testing equipment, familiarizing new staff with the facilities, techniques and procedures of testing biologics, and the training of support personnel.

In addition, a total of 3,865 assays were conducted on commercially produced biologics. Most of these assays were of a screening nature in which a variety of cultures of organisms used by commercial establishments for the production of bacterial vaccines were checked for purity and contamination. Some impure and contaminated cultures were disclosed and action was taken to prohibit the use of these cultures by licensed establishments thereby preventing the marketing of contaminated and impure products. Some vaccines produced from contaminated cultures which had been released prior to our assays were removed from the market.

A limited number of potency assays were made on commercially produced products such as Brucella vaccine, erysipelas vaccine, rabies vaccine, infectious bovine rhinotracheitis vaccine, and others. As much as 5 to 8 percent of production lots tested, which had previously been found satisfactory by producers on their own required tests, were found worthless or substandard in potency.

PESTICIDES REGULATION

Current Activities: The Federal Insecticide, Fungicide, and Rodenticide Act as amended includes control over the labeling and interstate movement of insecticides; fungicides; rodenticides; sanitizers and disinfectants on inanimate surfaces; nematocides, herbicides; plant growth regulators, desiccants and defoliants; and products for controlling, repelling or mitigating any animal, bird, reptile or related pests, control and repelling agents. Prior to offering such materials for interstate shipment, the producer or shipper must register acceptable labeling with the United States Department of Agriculture. Any pesticides which have been shipped in violation of the law are subject to regulatory action.

Under the registration activities of the Act convincing evidence must be submitted that the product will be effective for its intended purpose when used as directed on the label, and used safely when all precautions and warning appearing on the label are followed. For registration, it is also necessary to prove that when used on food crops any residues present will be within tolerances established by the Food and Drug Administration.

In the administration of the functions assigned by the Pesticides Residue Amendment to the Food, Drug and Cosmetic Act, P.L. 518, the Department certifies to the Food and Drug Administration as to the usefulness of pesticide chemicals for which tolerances or exemptions therefrom have been requested by industry, and expresses formal opinions as to whether or not the tolerances requested reasonably reflect the residues likely to remain on the treated raw agricultural commodities.

Selected Examples of Recent Progress:

1. Broadened regulations under the Act give increased protection by bringing under scrutiny pesticides used to control many animals and plants and certain viruses not previously identified as pests under the Act. These include products and devices for control of certain birds, mammals, reptiles, fishes and aquatic and terrestrial invertebrates which are pests. The effectiveness and safety of these products must be determined and the labels for their use reviewed to ascertain that directions and precautions for their application are adequate.

In evaluating safety of use, one of the primary considerations for registration is that the pattern of use on a food or feed crop must be such that it will result in no residue, or if there is a residue it will be within the tolerance limits established as being safe by the Food and Drug Administration. Safety to beneficial animals and plants, fish, and other wildlife is also a consideration of product evaluation and appropriate warnings are required if the nature of the product or its method of use may involve application to areas inhabited by beneficial animals.

2. Registration activities: The complexity of present-day pesticide formulations and the emphasis which must be placed on their safe use requires a careful review of such products prior to registration by competent scientists trained in the various fields of pesticide use.

During fiscal year 1962, a total of 5,104 new products were registered. Amended labels were accepted for 4,647 previously registered products. These amendments involved additional uses, revised directions, or changes in composition. Labels submitted for 3,563 products were found not acceptable; however, many of these were corrected, resubmitted, and accepted as new registrations or amendments. Permits authorizing shipments for experimental purposes were issued for 140 products, an increase of 60 over fiscal year 1961. These permits allow shipment of experimental products for field evaluations to secure information to justify registration for general sale.

3. Enforcement activities: Department investigators collected 1,864 official samples of economic poisons in 1962 for analysis and testing. The collection and testing of samples is necessary to detect any problems such as careless formulating practices, and any changes associated with the storage of chemicals for longer than normal periods. Chemical and/or biological tests were made on 1,567 of which 453 were found to be seriously misbranded, or adulterated, or otherwise in violation of the Act so as to warrant citation and/or seizure.

During the year, 203 shipments of economic poisons were offered for entry into this country. Of this number, 40 were examined and 12 shipments were detained, due to nonregistration or other violations. These shipments were later brought into compliance with the Act or were destroyed or returned. The remaining 163 shipments did not require sample testing before being released.

Seizure actions for 1962 increased 30% over the 1961 fiscal year and violations serious enough to warrant written notices of warning increased 43%.

4. "USDA Summary of Registered Agricultural Pesticide Chemical Uses" published. This summary is a compilation of pesticide chemical uses on food and feed crops which have been accepted for registration under the Federal Insecticide, Fungicide, and Rodenticide Act. It serves as an aid to registrants of economic poisons in preparing pesticide labels and as a guide to research workers, extension workers, and regulatory officials who are concerned with the recommendation or regulation of such products.

During the year, supplements have been issued on a quarterly basis. These supplements announced the acceptance of 27 new pesticide chemicals and approximately 2,200 new pesticide use patterns or changes from previously accepted use patterns. In addition, preliminary notices of all major additions and changes in the Summary have been issued on a weekly basis. These are distributed to Federal and state research workers, extension workers, and pesticide regulatory officials.

MEAT INSPECTION

Current Activities: Federal meat inspection assures that meat and meat products will be clean, sound, and wholesome for human consumption, free from adulteration, and truthfully labeled. The work consists of (1) the examination of food animals, including cattle, calves, sheep, swine, goats, and horses prior to slaughter to eliminate those animals found to be affected with diseases or other unwholesome conditions; (2) a thorough post-mortem examination of each carcass at the time of slaughter to detect and eliminate diseased and otherwise unfit meat; (3) destruction for food purposes of all diseased, unsound or otherwise unwholesome meat and meat-food products; (4) supervision of the preparation of meat and meat-food products to assure their cleanliness and wholesomeness during their preparation into articles of food; (5) guarding against the use of harmful preservatives and other deleterious ingredients; (6) supervision of the application of marks to meat and meat food products to show that they are "U. S. Inspected and Passed"; (7) supervision of the use of informative labels and prevention of the use of false and deceptive labels on meat and meat food products; (8) certification of meat and meat-food products for export; (9) inspection of meat and meat-food products offered for importation into this country; (10) supervision of the manufacture and labeling of process or renovated butter; (11) laboratory analyses to detect and eliminate meat and meat products containing harmful residues resulting from ingestion of pesticides, growth-promoting substances, drugs or biologicals or the treatment with or similar exposure of animals to such substances; and (12) developing and determining acceptable methods for humane slaughter of meat animals. Meat and meat-food products are examined for compliance with specifications of governmental purchasing agencies; reimbursements are received for the cost of such services. Reimbursements are also received from meat packing establishments for the cost of overtime work performed at their request.

Selected Examples of Recent Progress:

1. Plants requiring Federal Meat Inspection continues to increase. At the end of fiscal year 1962, Federal meat inspection was being conducted in 1,511 establishments located in 623 cities and towns. By the end of December in the current fiscal year, there were 1,557 establishments in 651 cities and towns. Based on experience, there is every reason to expect that this trend will continue. The following tabulation is based on actual data for fiscal years 1960 through 1962 with estimates for 1963 indicating the continued rise in demand by the industry for meat inspection services.

	<u>At Close of Fiscal Years</u>			<u>Estimated</u> <u>1963</u>
	<u>Actual</u> <u>1960</u>	<u>1961</u>	<u>1962</u>	
Number of establishments covered	1,396	1,451	1,511	1,581
Number of cities and towns in which establishments were located	572	599	623	665

2. Construction and renovation of meat packing plants increases. During fiscal year 1962, drawings and specifications were reviewed for 984 projects involving new or remodeled structures to determine whether the construction and facilities complied with Federal standards for slaughtering and meat processing establishments. A total of 868 projects were approved with an estimated cost of construction of \$70 million. The projects approved included 186 new establishments in 69 cities and towns where Federal meat inspection was not already maintained. This is the largest number of new plants approved in any single fiscal year.

Several new, highly efficient plants were constructed by major meat packers at sites near large livestock producing areas. This is indicative of the trend in relocating meat packing operations from large, obsolescent plants in metropolitan areas to smaller, compact units near the source of supply. This trend is expected to continue with increased tempo.

3. Continued consumer protection through proper labeling. During the fiscal year 1962, a total of 45,849 new labels and sketches for proposed labels were approved for use at inspected establishments and 882 labels for meat and meat food products intended for importation. In addition to this number, approval was withheld from 2,848 labels submitted because they did not comply with Federal meat inspection standards for properly labeled meat and meat food products. On file at the present time are 190,256 approved labels of which 180,056 are domestic and 10,200 covering foreign products.

During fiscal year 1962, 91 requests were received to examine food articles prepared with meat and/or meat products to determine if they were subject to the Federal Meat Inspection Act if offered for sale in interstate or foreign commerce. This required surveys to obtain information which was used in establishing standards of composition before labels for these new products could be approved.

4. Laboratory examinations of meat and meat food products increase substantially. During fiscal year 1962, chemical control laboratories examined a total of 135,573 samples of meat and meat food products and miscellaneous materials used in conjunction with the processing of meat and meat food products. This is an increase of 52% over fiscal year 1961. 6,424 samples were found to be unfit for use. The biological control laboratories evaluated, tested, and diagnosed a total of 10,591 specimens and samples during fiscal year 1962 as compared with 2,170 in the fiscal year 1961. The opening of a microbiological laboratory in Philadelphia and a co-operative arrangement with the Iowa State Veterinary Research Institute for checking on trichinae infection in swine accounts for the greater part of the increased capacity.
5. Inspection procedures improved. A reinspection of boneless meats and beef kidneys was inaugurated during the year in all federally inspected plants after it was found that traditional supervision inspection was not sufficient to ensure the packaging of only clean, wholesome product. This reinspection of product after preparation is done on a sampling basis designed to place full responsibility for compliance on the manufacturer. Controls on many meat food products were considerably improved as a result of this change.

6. Meat importation greatest on record. In fiscal year 1962, the inspection of imported meat and meat food products reached a record high level. In addition, import inspection responsibilities required more complicated sampling and laboratory controls to make closer evaluation of possible insecticide and chemical residues in imported meats. The disposition of imported meats at the various ports throughout the United States has been made more uniform by quickly reviewing and disseminating to all major ports the results of import shipments at other ports. This has tended to make the inspections uniform throughout the United States as well as to give each import inspector the benefit of recent findings at other ports which might be significant in reaching a proper disposition.
7. Action taken on violations of the Meat Inspection Act and Regulations. Violations of the meat laws are investigated. Most of these violations consist of illegal interstate movement of non-federally inspected meats. In most cases, compliance is gained through personal visits and distribution of information on requirements rather than court action. Enforcement procedures consisted of notice letters to 95 persons or firms, 33 cases were presented for criminal prosecutions, and 11 were found guilty as charged.
8. Fiscal year 1962 is first "complete" year of Humane Slaughter Law activities. During the first full year of activities under the Humane Slaughter Law, over 95 million animals or nearly 93 per cent of all livestock slaughtered under Federal meat inspection were dispatched humanely. Since the law is mandatory only for meat packers who sell products to Federal agencies, this coverage represents a substantial portion of the industry having humane slaughter operations.
9. Scope of Operations. During fiscal year 1962, over 107 million food animals were slaughtered and converted into meat and meat byproducts in establishments under Federal meat inspection. This is 83 per cent of the meat animals commercially slaughtered in the United States as compared with 80% in 1961. The remaining portion are slaughtered under various forms of State or local inspection or under no inspection at all.

The following tables reflect the volume of meat inspection activities:

Meat Inspection Activities (in thousands)

	<u>Actual</u> <u>1960</u>	<u>Actual</u> <u>1961</u>	<u>Actual</u> <u>1962</u>	<u>Estimated</u> <u>1963</u>	<u>Estimated</u> <u>1964</u>
<u>Antemortem inspection:</u>					
Animals passed	107,370	104,184	106,973	109,657	111,103
Animals suspected	131	141	132	139	142
Animals condemned	4	4	4	4	5
Total animals inspected	<u>107,505</u>	<u>104,329</u>	<u>107,109</u>	<u>109,800</u>	<u>111,250</u>
<u>Postmortem inspection:</u>					
<u>Carcasses passed for food purposes:</u>					
Entire carcass	99,179	95,631	97,978	100,304	101,554
After removal and condemnation of portions of carcass affected with various diseases and conditions	8,062	8,413	8,847	9,200	9,400
Subtotal	<u>107,241</u>	<u>104,044</u>	<u>106,824</u>	<u>109,504</u>	<u>110,954</u>
Carcasses condemned and destroyed for food purposes	251	281	280	290	290
Total carcasses inspected	<u>107,492</u>	<u>104,325</u>	<u>107,104</u>	<u>109,794</u>	<u>111,244</u>
Percentage of carcasses condemned in whole or in part	7.7	8.3	8.5	8.6	8.7
<u>Liver condemnations in cattle and calves:</u>					
Cattle and calves passed for food purposes included above ...	23,354	24,981	25,092	25,883	26,521
Number of livers condemned for food purposes	2,795	3,327	3,080	3,250	3,400
Percentage of livers condemned for food purposes	12.0	13.3	12.3	12.6	12.8

Meat Inspection Activities (in thousands) - Continued

Inspection of animals by species:

Antemortem inspection (animals)

	<u>Actual</u> <u>1960</u>	<u>Actual</u> <u>1961</u>	<u>Actual</u> <u>1962</u>	<u>Estimated</u> <u>1963</u>	<u>Estimated</u> <u>1964</u>
Cattle	18,456	19,864	20,161	20,862	21,500
Calves	4,976	5,198	5,015	5,100	5,100
Sheep and lambs	13,449	14,921	14,665	15,100	14,500
Goats	61	86	103	87	100
Swine	70,496	64,211	67,111	68,601	70,000
*Horses	67	49	54	50	50
Total	107,505	104,329	107,109	109,800	111,250

Postmortem inspection (carcasses):

Cattle	18,454	19,862	20,159	20,859	21,497
Calves	4,975	5,197	5,014	5,099	5,099
Sheep and lambs	13,448	14,921	14,664	15,099	14,499
Goats	61	86	103	87	100
Swine	70,494	64,210	67,110	68,600	69,999
*Horses	67	49	54	50	50
Total	107,499	104,325	107,104	109,794	111,244

*Horses are slaughtered and their meat is identified as such. Their meat is handled and prepared in separate establishments from those handling cattle, calves, sheep, swine and goats.

Meat and Meat Food Products Prepared and Processed Under
Supervision Classified by Type of Product
(in thousand pounds)

	<u>FY 1960</u>	<u>FY 1961</u>	<u>FY 1962</u>
Placed in cure:			
Beef	162,071	162,647	169,406
Pork	3,555,618	3,336,682	3,303,590
Other	3,016	8,099	4,053
Smoked and/or dried:			
Beef	52,181	50,646	51,606
Pork	2,630,920	2,534,277	2,517,769
Cooked meat:			
Beef	86,496	97,512	56,532
Pork	286,115	253,663	238,156
Other	2,370	3,458	4,961
Sausage:			
Fresh finished	270,840	252,166	259,224
To be dried or semi-dried	136,175	134,458	130,684
Frankfurters, weiners	679,631	718,166	712,268
Other	659,267	702,674	704,882
Loaf, headcheese, chile con carne ...	202,823	210,000	213,643
Steaks, chops, roasts	608,599	630,147	666,747
Meat extract	3,208	2,531	2,914
Sliced bacon	1,085,453	1,063,138	1,048,902
Sliced other	289,830	326,954	354,828
Hamburger	209,841	250,444	274,449
Miscellaneous meat products	190,716	243,989	306,890
Lard:			
Rendered	2,197,280	2,029,951	2,015,806
Refined	1,641,231	1,484,899	1,467,427
Oleo stock	74,426	66,292	70,534
Edible tallow	329,359	427,930	427,609
Rendered pork fat:			
Rendered	89,608	86,342	92,666
Refined	53,706	42,795	44,962
Compound containing animal fat	753,646	796,932	872,961
Oleomargarine containing animal fat .	178,144	124,881	199,818
Canned products	2,247,624	2,403,344	2,573,227
Horse meat products:			
Cured	1,189	509	2,125
Chopped	7,566	4,488	3,742
Edible oil	- -	242	- -
Canned horse meat	9,139	10,301	13,439
Total	18,698,088	18,460,557	18,805,820
Boning:			
Beef Boning		5,225,280	2,875,965
Pork Cut		7,613,409	10,550,317
Other Boning		734,598	1,037,339
Total		13,573,287	14,463,621
Grand Total		32,033,844	33,269,441

Meat and Meat Food Products Condemned on Reinspection and Destroyed, Fiscal Year 1962

Cause	Beef (pounds)	Veal (pounds)	Mutton and Lamb (pounds)	Goat Meat (pounds)	Pork (pounds)	Horse Meat (pounds)	Total (pounds)
Tainted, sour or putrid	3,351,060	59,147	73,644	11,050	5,729,523	4,941	9,219,365
Rancid	185,091	533	4,897	120	145,916	143	336,700
Molds or foreign odors	570,479	2,618	4,679	28	946,594	65	1,524,463
Unsound canned goods ..	282,753	29	5,303	171	207,578	5,362	501,196
Unclean or contaminated	4,188,061	140,455	101,281	1,079	5,893,256	9,986	10,334,118
Miscellaneous	153,763	3,236	8,359		214,494	1,278	381,130
Total	8,731,207	206,018	198,163	2,448	13,137,361	21,775	22,296,972

Materials Other than Meat Rejected for Use, Fiscal Year 1962

Produce	CAUSE OF REJECTION							Total (pounds)
	Noncompliance with Federal Regulations (pounds)	Con- tamination (pounds)	Odor, Color, or taste (pounds)	Sour and/or Moldy (pounds)	Unsound Canned Goods (pounds)	Unaccept- able equip- ment (pounds)	Miscel- laneous (pounds)	
Spices and seasoning	9,953	66,298	466	3,081	525			80,323
Flour and grain	18,447	95,830	710	45,394			150	160,531
Dairy and egg products ..	13,580	66,686	716	1,934	121			83,037
Fruits and vegetables ...	20	114,384	6,623	25,562	36,842			183,431
Soaps, oils and cleaners	5,806	520	1,554					7,880
Equipment	117	50				25,697		25,864
Casings	35	7,706		27				7,768
Curing agents	12,989	37,939						50,928
Miscellaneous	2,616	18,920	904	636			54	23,130
Total	63,563	408,333	10,273	76,634	37,488	25,697	204	622,892

Materials rejected for use which are listed above were either removed from the establishments, returned to the supplier, destroyed by the establishments, or held for Food and Drug Administration, or other health authority depending upon the cause of rejection.

Examination of Meat and Meat Food Products for Other Government Agencies
(Reimbursable)

<u>Branch of Government</u>	(in thousand pounds)		
	<u>FY 1960</u>	<u>FY 1961</u>	<u>FY 1962</u>
Department of Agriculture:			
Agricultural Marketing Service	3,118	3,058	3,422
Agricultural Stabilization and Conservation Service	132,102	272,522	356,705
Forest Service	233	181	172
Department of Interior:			
Fish and Wild Life	44	59	100
Bureau of Indian Affairs	694	497	189
Department of Health, Education and Welfare: (Public Health Service)	2,176	1,875	1,414
Department of Justice: (Bureau of Prisons)	68	49	57
Department of Army	148,340	143,107	188,149
Department of Navy	169,784	155,446	153,451
Coast Guard	14	4	-
General Services Administration	297	246	983
Veterans' Administration	32,887	29,476	28,657
Total	<u>a/489,757</u>	<u>b/ 606,520</u>	<u>c/733,299</u>

- a/ Includes 956 thousand pounds rejected.
b/ Includes 2,671 thousand pounds rejected.
c/ Includes 3,788 thousand pounds rejected.

Inspection of Imported Meat and Meat Food Products
(in thousand pounds)

<u>Fiscal Year</u>	<u>Passed For Entry</u>	<u>Refused Entry or Condemned</u>
1959	945,228	10,026
1960	870,317	1,847
1961	753,310	3,852
1962	1,069,338	5,636

Examinations of Labels and Sketches

	<u>FY 1960</u>	<u>FY 1961</u>	<u>FY 1962</u>
Number of labels and sketches approved ..	39,669	43,156	45,849
Number of labels approved for imported meat	850	964	882
Number of labels and sketches refused approval	<u>2,854</u>	<u>2,499</u>	<u>2,848</u>
Total number of labels and sketches reviewed	<u>43,373</u>	<u>46,619</u>	<u>49,579</u>

(b) Salaries and Expenses (Special Foreign Currency Program)

Appropriation Act, 1963 and base for 1964	\$5,265,000
Budget Estimate, 1964	<u>2,500,000</u>
Decrease	<u>2,765,000</u>

Note: The following justifications are presented on a funds available basis, and the amounts for 1963 and 1964 include carryovers from prior years. All dollar amounts, except where otherwise indicated, refer to dollar equivalents of foreign currencies and not U.S. dollars.

SUMMARY OF INCREASES AND DECREASES, 1964
(On basis of available funds)

Increases for:

Market development research under section 104(a) of Public Law 480	+1,820,077
Translation of scientific publications under section 104(k) of Public Law 480	+100,000
Decrease for agricultural and forestry research under section 104(k) of Public Law 480	<u>-1,920,077</u>
Net change	<u>- -</u>

PROJECT STATEMENT
(On basis of available funds)

Project	1962	1963 (estimated)	Increases (+) or Decreases (-)	1964 (estimated)
1. Section 104(a) - Market development research.....	\$2,858,997	\$5,408,892	+\$1,820,077	\$7,228,969
2. Section 104(k):				
a. Agricultural and forestry research ...	5,890,386	10,592,132	-1,920,077	8,672,055
b. Translation of scientific publications	- -	- -	+100,000	100,000
Total increased pay costs (P.L. 87-793).....	(- -)	(1,191)	(+800)	(1,991)
Total obligations a/....	8,749,383	16,001,024		16,001,024
Comparative transfer from other accounts b/.	-595,748	-934,146	+934,146	- -
Unobligated balance brought forward	-26,191,537	-23,302,902	+9,801,878	-13,501,024
Unobligated balance carried forward	23,302,902	13,501,024	-13,501,024	- - -
Total appropriation	5,265,000	5,265,000	-2,765,000(1)	2,500,000

- a/ Comparable applied costs are \$3,658,264 in 1962, \$5,500,000 in 1963, and \$8,800,000 in 1964. Differences between costs and obligations are due primarily to the excess of foreign currency contracts and grants made over research work completed in each year.
- b/ Allocation from "Translation of Publications and Scientific Cooperation, Executive Office of the President."

BASIS OF THE ESTIMATE

The appropriation requested for 1964 is based upon, and would be restricted to, purchase of those foreign currencies which are determined by the Treasury Department to be available in amounts in excess of normal U. S. requirements. For 1964, excess currencies are expected to be available in only eight countries -- Burma, Egypt, India, Indonesia, Israel, Pakistan, Poland and Yugoslavia.

Overseas research utilizing foreign currencies under sections 104(a) and 104(k) of Public Law 480 supplements and complements that financed by regular dollar appropriations. These foreign research projects do not duplicate or displace domestic research conducted by the Department or its cooperators, nor do they reduce the need for regular dollar appropriations for such research.

It has been determined, through surveys of the scientific capacity of foreign institutions and evaluation of research proposals submitted by the institutions, that the appropriation requested for 1964 can be used to finance research beneficial to American agriculture in two of the eight countries indicated above.

INCREASES AND DECREASES

The Budget Estimates for 1964 reflect a decrease of \$2,765,000 in appropriations consisting of an increase of \$1,820,077 in obligations for market development research under section 104(a) and \$100,000 for translation of scientific publications under section 104(k) of Public Law 480, offset by a decrease of \$1,920,077 in obligations for agricultural and forestry research under section 104(k).

The increase for market development research in 1964 is due primarily to an estimated increase in the rate of obligations for such research in selected non-excess currency countries with good capacity for this type of research. These obligations would be financed from unobligated balances of currencies made available in prior years.

The use of funds for translation of scientific publications is authorized under section 104(k) of P.L. 480. The proposed use of \$100,000 for such purpose in 1964 would permit obtaining translations of wide variety of scientific findings, now available in several foreign languages, that would benefit agricultural and forestry workers in the United States. This project is intended to be in addition to, and not displace, the translation activities conducted by the National Science Foundation which only partially meet the Department's needs.

The following tables show the distribution by country of the estimates for (1) new obligational authority and unobligated balances brought forward for 1964, and (2) estimated expenditures for 1963 and 1964. The tables do not reflect conversion of foreign currencies which may become possible in fiscal year 1964. If such conversion should be possible, the Department would request conversion of a portion of these currencies to finance research in selected foreign countries having capabilities for effective research.

Estimated Obligations, Fiscal Year 1964, by Country and Project
(Dollars in thousands)

<u>Country:</u>	<u>Estimated Unobligated Balance brought forward from FY 1963</u>	<u>New Obligational Authority FY 1964</u>	<u>Total Estimated Obligations FY 1964</u>
Australia	\$199.5	-	\$199.5
Austria	199.5	-	199.5
Belgium	199.5	-	199.5
Brazil	2.5	-	2.5
Burma	138.0	-	138.0
Ceylon	309.1	-	309.1
Chile	1.0	-	1.0
China (Taiwan)	149.0	-	149.0
Colombia	231.6	-	231.6
Finland	36.0	-	36.0
France	1.5	-	1.5
Germany (Federal Republic)	531.0	-	531.0
Greece	63.5	-	63.5
India	878.5	\$1,800.0	2,678.5
Indonesia	490.2	-	490.2
Israel	1,318.1	700.0	2,018.1
Italy	651.8	-	651.8
Japan	402.0	-	402.0
Korea (So. Korea)	6.0	-	6.0
Netherlands	402.0	-	402.0
Pakistan	1,546.3	-	1,546.3
Peru	302.0	-	302.0
Philippines	34.0	-	34.0
Poland	2,537.0	-	2,537.0
Spain	821.3	-	821.3
Syria	1.0	-	1.0
Sweden	99.0	-	99.0
Switzerland	199.0	-	199.0
Turkey	131.6	-	131.6
U.A.R. (Egypt)	392.2	-	392.2
United Kingdom	505.8	-	505.8
Uruguay	73.5	-	73.5
Yugoslavia	648.0	-	648.0
Total	<u>13,501.0</u>	<u>2,500.0</u>	<u>16,001.0</u>

Project:

Section 104 (a):

Market development research ..	6,729.0	500.0	7,229.0
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Section 104(k):

Agricultural and forestry research	6,772.0	1,900.0	8,672.0
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Translation of scientific publications	- -	100.0	100.0
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Total	<u>13,501.0</u>	<u>2,500.0</u>	<u>16,001.0</u>
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Estimated Expenditures by Country

~~Fiscal Years 1963 and 1964~~

(Dollars in thousands)

	<u>1963</u>	<u>1964</u>
Australia .....	.5	30.0
Austria .....	.5	30.0
Belgium .....	.5	30.0
Brazil	196.0	208.0
Burma .....	.5	21.0
Ceylon	7.0	53.0
Chile	56.0	80.0
China (Taiwan)	15.0	22.0
Colombia	131.0	173.0
Finland	279.0	298.0
France	246.0	283.0
Germany (Federal Republic)	48.0	148.0
Greece	23.0	39.0
India	1,066.0	1,690.0
Indonesia	6.0	83.0
Israel	837.0	1,402.0
Italy	421.0	537.0
Japan	73.0	168.0
Korea (So. Korea)	21.0	32.0
Netherlands	33.0	102.0
Pakistan	130.0	469.0
Peru	45.0	91.0
Philippines	4.0	9.0
Poland	440.0	765.0
Spain	326.0	474.0
Sweden	56.0	89.0
Switzerland	1.0	30.0
Syria	42.0	72.0
Turkey	58.0	79.0
U.A.R. (Egypt)	131.0	245.0
United Kingdom	379.0	450.0
Uruguay	206.0	253.0
Yugoslavia	22.0	145.0
Total expenditures	<u>5,300.0</u> a/	<u>8,600.0</u> a/

a/ Includes expenditures under previous allocations from the appropriation "Translation of Publications and Scientific Cooperation, Executive Office of the President", as follows: 1963, \$500.0 thousand, and 1964 \$600.0 thousand. These amounts have been included in order to provide a single consolidated schedule of all expenditures relating to the Special Foreign Currency Program.

STATUS OF PROGRAM

In fiscal year 1958, the Department initiated a research program abroad utilizing foreign currencies from the sale of surplus agricultural commodities under Title I of Public Law 480. Originally confined to market development research authorized by section 104(a) of P.L. 480, the program was subsequently expanded to include agricultural and forestry research under section 104(k) of the law. It now involves work in the following general areas:

1. Farm research, including crops research and plant science, entomology, animal husbandry, livestock diseases and parasites, soil and water conservation and agricultural engineering.
2. Utilization research, including the development of new or improved methods of utilizing agricultural materials.
3. Marketing research, including studies of food and fiber preference of foreign consumers, improvement of quality and acceptability of U. S. agricultural products in foreign markets, and improvement in handling and storage of agricultural products.
4. Forestry research, including research on development of better forest products and development of information of value for the protection of forests in the United States.
5. Agricultural economics research, including farm and market economics research and foreign trade analysis.
6. Human nutrition research, including food composition, experimental nutrition, human metabolism and food quality research.

Dollar-financed research in these areas is conducted by the Agricultural Research Service, the Agricultural Marketing Service, the Forest Service, and the Economic Research Service in their respective areas of functional and subject-matter responsibilities. Research under this program is designed to complement and not to duplicate or displace the dollar-financed research activities of these agencies..

Within the Department, primary responsibility for administration of this program is assigned to the Agricultural Research Service. The activities are coordinated with operations in the Forest Service, Agricultural Marketing Service, Economic Research Service, and Statistical Reporting Service through a Policy and Program Development Board consisting of members of these Services and the Foreign Agricultural Service. This Board develops broad policies for operations of the program and coordinates the activities of the various Department agencies in carrying out research financed by foreign currencies. Initial arrangements for the research in foreign countries are made through the Department of State and the Agricultural Attaches of the Foreign Agricultural Service of the Department. Prior to executing any research agreement with a foreign institution, the Department also consults with the Agricultural Attaches.

and Heads of Missions to insure that the proposed projects would be consonant with the foreign policy of the United States.

Great care is exercised to make certain that research projects undertaken benefit American agriculture and do not develop undesirable competition for American agricultural products abroad. Careful attention is given to the type of institution conducting research under this program to make certain it has the facilities, equipment, and personnel to carry out sound and productive research. Because of these high standards some 38% of the proposals received from foreign institutions have been rejected by the Department; final determination has not yet been made on acceptance or rejection of an additional 38%. The remaining 24% have been accepted and agreements have been executed or are awaiting execution.

To the maximum extent possible, the costs of administering the program are paid from foreign currencies. Foreign travel and other costs of Department officials abroad and all possible expenses of the regional offices, including salary costs of foreign nationals, are paid from foreign currencies. U. S. dollar costs of administering the program consist primarily of expenses in Washington, D. C. and salaries of U. S. citizens employed in two foreign offices maintained to administer the program, one in Rome, Italy and the other in New Delhi, India. Part of the salaries of U. S. citizens employed in the foreign offices is, with their consent, paid in foreign currency. Dollar savings from this procedure amounted to \$25,214 in 1962 and will amount to about \$26,800 in 1963 and \$27,300 in 1964. Direct administrative costs are as follows:

	<u>F.Y. 1962</u>	<u>F.Y. 1963 (Est.)</u>	<u>F.Y. 1964 (Est.)</u>
Payable from foreign currencies	\$221,601	\$292,000	\$292,000
Payable from U. S. dollar appropriations (Salaries and Expenses, ARS; Marketing Research and Services, AMS; Forest Protection and Utilization, FS; and Salaries and Expenses, ERS)	<u>247,646</u>	<u>303,000</u>	<u>317,000</u>
Total	<u>469,247</u>	<u>595,000</u>	<u>609,000</u>

Selected Examples of Recent Progress. Through June 30, 1962, a total of 316 research agreements had been executed with foreign research institutions. In fiscal year 1962, 145 agreements were executed, which was 43 more than in fiscal year 1961. Agreements vary in total amount for the life of the project (averaging 4 to 5 years) from under \$10,000 to about \$250,000. Examples of research progress under these agreements, only a few of which have yet been completed, with country and U. S. dollar equivalent (at June 30, 1962 exchange rates) for each agreement, follow:

Farm Research

1. Sheep hypothalamus gland controls lactation. Initial studies in Poland indicate that the hypothalamus plays a controlling role in the process of initiating lactation in sheep. Through surgical operations on the pituitary stalk section in the brain and neuro-physiological investigations on the hypothalamus, it has been possible to demonstrate this role of the hypothalamus in the release by the pituitary of the lactation stimulating hormone. These studies represent an addition to the basic knowledge of sheep lactation, an important factor in the reproductive performance of sheep. (Poland \$28,996)
2. Scrapie found transmissible to goats. Evidence has been accumulated to show that scrapie can be transmitted to goats by contact with either infected sheep or goats. Confirmation was based upon clinical signs of the disease and laboratory procedures. Four goat kids developed scrapie within 12 months subsequent to intracerebral injection of goat brain materials. (U. K. \$151,352)
3. Progress in isolating causative agent of scrapie. An ether-extracted scrapie sheep brain preparation, passed through calcium phosphate and injected into sheep, is believed to be the most "pure" preparation of scrapie material yet shown to be active. This finding makes the work of searching for the causative agent or agents of scrapie more hopeful.

Another approach to identification of the scrapie-causing agent, or agents involves mouse tissue. The injection of goat brain material into several mice induced, within 7 to 14 months, the onset of signs resembling those of scrapie. The condition has been transmitted from mouse to mouse by inoculation. The infection rate in mice was 100 percent, and there is evidence of the adaptation of the agent in mice. This work represents the first successful induction of scrapie in mice. (U. K., two agreements: one, which is a part of item 2 above; and the other one at \$150,056)^(50, 56)

4. Host of the giant liver fluke identified. A Turkish project has identified the intermediate host of the giant liver fluke - a parasite in Turkey and the United States - as the snail, Lymnaea auricularia. Culture procedures for growing these snails and methods for inoculating them with the fluke have been developed. Livestock have been artificially infected with the fluke and the disease produced. Laboratory studies have been conducted to evaluate chemicals that might be effective in the therapy of animals infected with the giant liver fluke. Hexachlorophene was found to be the most effective substance tested. Substantial data have also been obtained about the effectiveness of these insecticides on the parasites. (Turkey, \$23,705)

5. Source found for resistance to races of stem rust of oats. Research projects in Israel and Colombia are supplying needed information about sources of resistance to races of stem rust threatening the oat crop in the United States. Cooperative research in Colombia revealed in 1960 the presence of virulent races that attack all varieties of the USDA World Oat Collection. It is now believed that trace amounts of these races already occur within the continental United States. Among the first group of collections made from the five species of wild oats that occur in Israel, one collection of Avena barbata has shown moderate resistance to the most virulent race in Colombia. Additional collections are being made and screened for resistance in Israel and promising collections will be given final tests in Colombia. As sources of resistance are found, breeding projects will be initiated to incorporate resistance into United States varieties. (Colombia, \$62,355 and Israel, \$110,074)

6. Useful plant materials collected abroad. Plant collection projects have been initiated in seven countries. The principal objective of these projects is to collect plant samples of native floras for chemical and agronomic evaluation as potential new crops in the United States. Of the 1100 samples received about half have had preliminary screening as sources of new seed oils, gums, and proteins, for fiber or paper pulp, or for anti-tumoral activity.

Early results are promising. Thirty-four species from Turkey and several from Israel are of sufficient interest as sources of seed oils to merit further study. One has large amounts of a very unusual fatty acid which, if the determination of molecular structure confirms early results, has considerable potential for industrial uses. Bulbs of a liliaceous plant from Israel show considerable activity in anti-tumoral tests. Two species of Solanum from Colombia contain promising amounts of new steroidal-alkaloids, potential starting chemicals for the elaboration of corticoidal drugs. Additionally some 200 introductions have been added to the germ plasm collections of established horticultural and field crops. (Brazil, \$108,314; Israel, \$69,333; Pakistan, \$60,424; Spain, \$156,329; Turkey, \$134,444; Uruguay, \$114,335 and Yugoslavia, \$30,000)

7. Biological control of weeds. Insects attacking several weed species of interest to the United States are being studied in Pakistan under a project started in August 1960. Insects that attack dodder, cockleburrs, thistles, and nettles have been found. However, their introduction into the United States must await experimentation in Pakistan to determine whether they could attack useful plants in this country. (Pakistan, \$38,988)

Utilization Research

8. New polymers from corn sugar. Research has produced new, water soluble polymers from corn sugar that have unique properties which are being evaluated for industrial utility. Nylon-like polymers have also been made from corn sugar; these resins have aroused industrial interest as possible shrink-proofing agents for woolen fabrics. This discovery is the subject of a U. S. public service patent application. (U. K., \$162,866)
9. Studies on U. S. wheat flours. Basic investigations of 10 varieties of U. S. wheat are relating the amounts of phosphorus-containing protein and fat components of wheat flour to important baking characteristics of flour in order to determine why each is best suited to a particular baking use. These findings are elucidating factors which can aid in the expansion of export markets for U. S. wheats, particularly to hard currency countries. (France, \$55,178)
10. Flavor and shelf life of oat foods. Basic studies on antioxidant substances in oats have provided information on their structure that is expected to lead to improved flavor and extended shelf life of oat foods. These studies have resulted in new nontoxic antioxidants which are the subject of a U. S. public service patent application; they are being followed closely by oat processors in the United States. (U. K., \$61,514)
11. Cohesion of cotton fibers. The cohesion of cotton fibers affects the machinery settings to be used in the spinning of yarns of optimum quality. An apparatus has been developed for measuring the minimum twist associated with proper cohesion in cotton rovings and yarns, and the major laws governing the minimum twist of cohesion have been established. These developments should serve as a guide in increasing product quality and processing efficiency in the spinning of cotton. (Spain, \$25,438)
12. Crimp in cotton fibers. Crimp, an important fiber characteristic of cotton, is generally regarded as a factor in the separation and alignment of cotton fibers during mechanical processing. A new and improved method and instrument have been devised for measuring the crimp of cotton fibers. They will provide essential tools for the study of fiber behavior in the mechanical processing of cotton. (Israel, \$138,400)
13. Sulfur compounds in wool. Several previously unidentified sulfur substances have been isolated from wool and their role in properties important to easy-care have been elucidated. This knowledge will speed the development of greatly improved wool fabrics. (U. K., \$62,570)

14. Linseed oil. More than 45 minor constituents have been isolated from linseed oil and identified. This work should permit identification of the components that are responsible for the ability of linseed oil to set and adhere to surfaces. (Italy, \$82,355)
15. Improved quality in U. S. hides for export. Progress is being made on studies conducted in Italy on the cause and prevention of bacterial hide damage (red heat) that develops in transoceanic shipment and on the cause of poor quality of sole leather made from U. S. hides using Italian methods. These studies should be valuable to our hide exporters in improving the competitive position of U. S. hides in the foreign market. (Italy, two agreements totaling \$117,674)
16. Basic studies aid sausage manufacturers. Basic studies on the effect of microorganisms on the development of flavor, color, and other desirable chemical changes occurring during sausage manufacture indicate that no single strain of bacteria can produce all the changes desirable in the ripening of dry sausage, but a mixed culture comprised of several strains will be required to effect these changes. (Finland, \$41,171)
17. Sulfur dioxide in processing vegetables. Basic studies with radioactively labeled sulfur compounds are helping to elucidate the role of sulfur dioxide in preserving processed vegetables. It has been shown that sulfur dioxide retards browning more effectively in systems containing added amounts of the amino acid, glycine, than in those to which glucose (corn sugar) has been added. (U. K., \$158,766)
18. Discoloration of processed products. After-cooking darkening is a problem with some processed potato products. Scientists have not only identified the basic cause of this costly deterioration, but have developed a treatment for obviating this change. Application of this treatment to other processed fruits and vegetables is greatly enhancing the stability of these products. (U. K., \$101,184)
19. Collection of yeast cultures. About 250 cultures of yeast have been isolated from a variety of sources in Spain for supplementing the Agricultural Research Service's Culture Collection. These cultures have revealed new strains of yeast which have not heretofore been available for studies on the fermentation of grains to industrial products. (Spain, \$48,807)

Marketing Research

20. Residue problems in food processing studied. The existence of insecticide and fungicide residues on U. S. foods and food products tends to restrict the potential foreign market for those commodities. Studies of this problem involved investigation of the disappearance of captan and malathion residues from fruit

during processing. Practically all of the captan and malathion residues were destroyed by heating during the preservation processing. During one week of storage of beans and apples at 20 degrees centigrade, there was relatively small residue loss for captan (15% to 25%), but substantial loss for malathion (80% to 90%). There was no significant residue loss for either captan or malathion when these products were held in frozen storage. (Finland, \$56,301)

21. Grading of rice facilitated. Grading of rice for export has been facilitated by studies underway in Spain. These studies have shown that: (a) viscosity of rice starch is correlated with taste; (b) rice quality is affected by storage and such changes are important in a study of quality evaluation procedures; (c) the protein fraction, particularly in the outer layers of the kernel, appears to play an important role in rice quality. (Spain, \$19,406)

Forestry Research

22. Prediction of proper tree pollination time. Determining the proper time for pollination in forest tree breeding requires intensive survey work including frequent visual inspection of the flowers, some of which may be 50 to 100 feet from the ground. In a study of seed production in Finland, a temperature summation was found to be closely related to the stage of flower development. Thus at a certain number of degree-hours the flowers would be receptive for pollen. Although the number of degree-hours necessary for the development of flowers varies among species, the concept will provide tree breeders with a valuable predictive technique to aid their research. (Finland, \$41,624)
23. Better test for tree fertilization. Another problem in forest tree breeding is that of incompatibility between possible parents or incomplete fertilization, often indicated by premature dropping of the conelet. In a study of this phenomenon, Finnish scientists discovered that an abscission layer formed in unfertilized cones, causing the breaking-off of the cone. No such layer formed in the fertilized cones. Thus the lack of fertilization is indicated by premature cone drop, with the implication that the parents are not compatible. (Finland, \$55,328)
24. Predators of the balsam woolly aphid found. Surveys in India and Pakistan have revealed the presence of many insect predators of the balsam woolly aphid or closely related species. During the past year several hundred predators, representative of several different species, were collected and shipped to the United States for study and possible colonization. The biologies and ecologies of some of the more promising species were studied intensively in India and Pakistan. The results of these investigations have been made available to workers in this country where they are

proving helpful in efforts to establish the predator species in aphid-infested stands of fir. (India, \$81,217 and Pakistan, \$50,572)

25. New disease of pines found. A new needle-cast disease of hard pines has been found in Spain. A publication in English describing the causal fungus is now in preparation and will be widely distributed to quarantine and other regulatory agencies around the world in an effort to prevent its introduction into other countries. (Spain, \$40,967)

Agricultural Economics Research

As of June 30, 1962, four agreements in agricultural economics research had been executed; one in fiscal year 1961 and three in fiscal year 1962. Additional agreements are expected to be executed in fiscal year 1963. The 1962 agreements, for example, included a study of rice marketing in Colombia, an important rice consuming country, on determining (1) channels of rice trade, including assembly, transportation, storage, processing and distribution; (2) costs of these services with a view to establishing price spreads and margins; and (3) Colombian foreign trade in rice under different levels of price, income and domestic supplies. (Colombia, \$30,937)

Human Nutrition Research

One human nutrition research agreement was executed early in fiscal year 1963. This agreement covers development of protein-rich mixtures of food from vegetable sources and the determination of the biological values of such mixtures (Israel, \$25,703). Additional agreements are expected to be executed in fiscal year 1963.

Project Proposals and Status of Agreements. From the inception of the Special Foreign Currency Program through June 30, 1962, the Department had received a total of 1,641 research proposals from interested overseas institutions. The status of these proposals is shown in the following tables:

Special Foreign Currency Program
Research Proposals and Agreements by Subject Matter
 (through June 30, 1962)

Subject Matter	Number of Proposals				Agreements Executed		
	Received	Rejected	Awaiting Modification or Negotiation	Approved and Awaiting Execution	Number	Dollar Equivalent	Average Dollar Equivalent
						Per Agreement	
Farm Research...	697	226	310	41	120	\$6,524,870	\$54,374
Utilization Research.....	548	297	113	21	117	7,866,349	67,234
Marketing Research	98	24	48	6	20	822,498	41,125
Forestry Research	218	60	87	16	55	3,063,463	55,699
Agricultural Economics Research	49	11	34	-	4	156,163	39,041
Human Nutrition Research	31	3	27	1	-	-	-
Total	1,641	621	619	85	316	18,433,343	58,333

Special Foreign Currency Program
Approved Research Proposals and Agreements Executed by Country
(As of June 30, 1962)

<u>Country</u>	<u>Approved Proposals Awaiting Agreement Execution</u>	<u>Agreements Executed</u>	
		<u>Number</u>	<u>Dollar Equivalent</u>
Europe:			
Finland	1	36	\$1,928,906
France	1	18	1,127,636
Germany (Fed.Rep.)	-	1	55,112
Greece	-	1	64,706
Italy	5	20	1,260,300
Netherlands	-	2	98,124
Poland	7	43	1,544,280
Spain	2	25	1,395,263
Sweden	-	1	101,334
United Kingdom	1	34	2,921,254
Yugoslavia	2	1	30,000
Subtotal	<u>19</u>	<u>182</u>	<u>10,526,915</u>
Asia:			
Ceylon	-	1	19,965
India	35	34	1,829,781
Israel	6	42	2,414,279
Japan	2	3	49,782
Pakistan	12	8	448,647
Philippines	2	2	27,719
Turkey	4	4	223,353
Subtotal	<u>61</u>	<u>94</u>	<u>5,013,526</u>
Africa:			
U.A.R. (Egypt)	1	3	204,154
South America:			
Brazil	1	18	974,915
Chile	-	1	62,584
Colombia	1	7	630,199
Peru	-	3	258,373
Uruguay	2	8	762,677
Subtotal	<u>4</u>	<u>37</u>	<u>2,688,748</u>
TOTAL	<u>85</u>	<u>316</u>	<u>18,433,343</u>

Obligations, Expenditures and Conversions of Foreign Currencies.

Obligations: Through June 30, 1962, the Department had obligated a total of \$19,088,864 for activities under the Special Foreign Currency Program. In fiscal year 1963, it plans to obligate an additional \$16,001,024. These obligations may be summarized as follows:

	<u>Obligations through F. Y. 1963</u> (dollars in thousands)		
	<u>Market Develop- ment Research (sec.104(a))</u>	<u>Agricultural and Forestry Research (sec.104(k))</u>	<u>Total</u>
F. Y. 1958	\$371.5	-	\$371.5
F. Y. 1959	1,651.8	\$1.7	1,653.5
F. Y. 1960	2,230.5	793.2	3,023.7
F. Y. 1961	1,893.2	3,397.6	5,290.8
F. Y. 1962	2,859.0	5,890.4	8,749.4
F. Y. 1963(est.)	<u>5,408.9</u>	<u>10,592.1</u>	<u>16,001.0</u>
Total	<u>14,414.9</u>	<u>20,675.0</u>	<u>35,089.9</u>

The following tables present a more detailed picture of the \$8,749,383 obligated in fiscal year 1962 and the \$16,001,024 estimated to be obligated in fiscal year 1963.

Special Foreign Currency Program, 1962 Obligations
(Dollars in thousands)

Market Development Research (Section 104(a))				Agricultural and Forestry Research (Section 104(k))				Total	
Utili- zation Research	Marketing Research		Agri- cultural Economics Research	Farm Research	Human Nutrition	Forestry Research	Marketing Research	Agri- cultural Economics Research	Total
	\$	.4							
Brazil	\$179.2	\$.4	\$ -	\$ 586.2	\$ -	\$ 185.3	\$ 26.4	\$ -	\$ 977.5
Ceylon .....	.1	-	-	20.1	-	.1	-	-	20.8
Chile	-	-	-	-	-	61.1	-	-	61.1
Colombia	-	63.2	31.1	450.3	-	86.6	-	-	631.2
Finland	75.9	.4	-	-	-	401.9	-	57.3	535.5
France	437.5	109.7	-	-	-	-	-	-	547.2
Germany (Fed. Rep.) ..	65.0	.1	-	-	-	-	-	-	65.1
Greece	-	-	-	-	-	55.1	-	-	55.1
India	493.6	.2	-	799.4	14.6 a/	216.8	2.0	4.8	1,531.4
Israel	302.8	46.5	-	495.1	.1 a/	123.8	35.2	24.6	1,028.1
Italy	412.2	45.6	-	102.5	-	46.7	-	-	607.0
Japan	44.5	-	-	-	-	-	-	-	44.5
Netherlands ..	36.0	62.3	-	-	-	-	.4	-	98.3
Pakistan .....	.1	-	-	189.5	-	1.8	-	-	191.8
Peru	-	-	-	91.5	-	-	-	-	91.5
Philippines ..	-	-	-	27.7	-	-	-	-	27.7
Poland	95.8	28.6	-	532.2	.2 a/	391.2	38.5	.1	1,086.6
Spain	105.4	.2	-	208.6	.1 a/	64.9	.1	.1	379.4
Sweden	101.5	-	-	-	-	-	-	-	101.5
Turkey .....	.2	-	-	-	-	-	-	-	.2
U.A.R. (Egypt)	.6	-	-	56.6	-	-	-	-	57.2
United Kingdom	59.0	.6	-	2.1	-	-	-	-	61.7
Uruguay .....	.2	59.9	-	487.9	-	.4	-	.1	548.5
Yugoslavia ..	.4	.1	-	.2	-	.2	-	-	.9
Grand Total ..	2,410.0	417.8	31.1	4,049.9	15.0 a/	1,635.9	102.6	87.0	8,749.3

a/ Administrative expenses for projects expected to be executed in 1963.

Special Foreign Currency Program, Estimated 1963 Obligations
(Dollars in thousands)

	Market Development Research (Section 104(a))		Agricultural and Forestry Research (Section 104(k))				Agri- cultural Economics Research		Total
	Utili- zation Research	Marketing Research	Farm Research	Human Nutrition	Forestry Research	Marketing Research			
Austria	\$.5	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$.5	
Australia .....	.5	-	-	-	-	-	-	.5	
Belgium .....	.5	-	-	-	-	-	-	.5	
Brazil	43.2	-	75.4	-	41.7	.5	-	160.8	
Burma	-	-	.5	-	-	-	-	.5	
Ceylon	18.3	-	.5	-	-	-	-	18.8	
Chile	-	-	69.1	25.5	129.5	-	-	224.1	
China (Taiwan) ...	100.5	-	-	-	.5	-	-	101.0	
Colombia	2.5	.5	88.7	-	10.5	-	-	102.2	
Finland	97.1	23.8	18.3	-	35.5	.9	-	175.6	
France	404.7	88.8	-	-	-	-	-	493.5	
Germany (Fed.Rep.)	46.4	202.6	-	-	-	-	-	249.0	
Greece	-	-	40.5	-	40.5	-	-	81.0	
India	1,247.9	51.4	1,880.0	245.7	212.6	20.0	125.7	3,783.3	
Indonesia	38.2	-	.5	-	-	-	-	38.7	
Israel	1.0	200.5	1,864.3	163.6	541.5	10.0	93.2	2,874.1	
Italy	306.5	273.6	65.0	-	165.0	-	-	810.1	
Japan	443.9	-	-	-	-	-	-	443.9	
Korea (South Korea)	-	-	-	-	-	-	-	141.5	
Netherlands	52.0	51.8	-	-	-	-	-	103.8	
Pakistan	2.0	-	238.7	-	65.1	28.7	-	334.5	
Peru	-	-	.5	-	-	-	-	.5	
Philippines	-	-	.5	-	-	-	-	.5	
Poland	5.0	1.0	268.5	-	391.0	51.0	-	716.5	
Spain	263.4	37.0	150.0	-	153.0	-	-	603.4	
Sweden	251.5	-	-	-	-	-	-	251.5	
Switzerland	1.0	-	-	-	-	-	-	1.0	

Special Foreign Currency Program, Estimated 1963 Obligations - Continued
(Dollars in thousands)

	Market Development Research (Section 104(a))		Agricultural and Forestry Research (Section 104(k))					Total
	Utili- zation Research	Marketing Research	Farm Research	Human Nutrition	Forestry Research	Marketing Research	Agri- cultural Economics Research	
Syria	-	-	249.0	-	-	-	30.0	279.0
Turkey .....	.5	-	116.1	-	-	35.0	-	151.6
United Kingdom	206.0	1.0	2.0	-	-	-	-	209.0
U.A.R. (Egypt)	151.0	-	398.3	-	50.9	-	51.3	651.5
Uruguay	103.5	.5	175.8	-	182.0	-	38.0	499.8
Yugoslavia .....	.5	-	39.0	-	77.5	-	-	117.0
	<u>3,788.1</u>	<u>932.5</u>	<u>5,741.2</u>	<u>434.8</u>	<u>2,238.3</u>	<u>146.1</u>	<u>338.2</u>	<u>13,619.2</u>
Undistributed								<u>2,381.8</u> a/
Total								<u>16,001.0</u>

a/ Includes \$1,181.8 thousand reserved primarily to cover currency fluctuation.

Expenditures: Expenditures of foreign currencies, from the inception of the program through June 30, 1962, totaled \$6,538,379. In addition, the Department plans to expend \$5,300,000 in fiscal year 1963. These expenditures may be summarized as follows:

Expenditures through F. Y. 1963
(dollars in thousands)

	Market Develop- ment Research (sec.104(a))	Agricultural and Forestry Research (sec.104(k))	Total
F. Y. 1959	\$195.1	\$.1	\$195.2
F. Y. 1960	654.6	75.1	729.7
F. Y. 1961	1,254.9	845.4	2,100.3
F. Y. 1962	1,735.8	1,777.4	3,513.2
F. Y. 1963 (est.)	<u>2,100.0</u>	<u>3,200.0</u>	<u>5,300.0</u>
Total	<u>5,940.4</u>	<u>5,898.0</u>	<u>11,838.4</u>

Conversions: As of June 30, 1962, the Department had converted a total of \$2,202,077 of foreign currencies. Of this amount, \$770,000 was converted in fiscal year 1961 and \$1,432,077 in fiscal year 1962. Additional conversions of \$2,000,000 may be made in fiscal year 1963. A summary of the \$1,432,077 converted in 1962 and the \$2,000,000 estimated to be converted in 1963 follows:

Conversions, F. Y. 1962 and 1963
(dollars in thousands)

	F. Y. 1962	F. Y. 1963 (est.)
Converted from:		
India	\$1,028.1	\$400.0
Indonesia	100.0	-
Israel	125.0	-
Pakistan	120.0	-
Poland	-	1,000.0
Yugoslavia	59.0	600.0
Total	<u>1,432.1</u>	<u>2,000.0</u>
Converted to:		
Australia	-	200.0
Austria	-	200.0
Belgium	-	200.0
Germany (Fed. Rep.) .	458.3	200.0
Japan	274.7	400.0
Netherlands	266.6	200.0
Sweden	299.7	-
Switzerland	-	200.0
United Kingdom	132.8	400.0
Total	<u>1,432.1</u>	<u>2,000.0</u>



(c) Construction of Facilities

PROJECT STATEMENT

Project	1962	1963 (estimated)	1964 (estimated)
Construction of research facilities <u>a/</u>	\$3,445,849	\$4,450,554	\$200,000
Unobligated balance brought forward ..	-7,296,403	-4,650,554	-200,000
Unobligated balance carried forward ..	4,650,554	200,000	- -
Total appropriation or estimate	800,000	- -	- -

a/ Represents obligations. Capital outlay is \$2,523,025 for 1962 and is estimated at \$3,911,704 for 1963, and \$1,972,200 for 1964. Differences between capital outlay and obligations reflect, primarily, the normal time lag between letting contracts and completion of work.

Note -- The above reflects the status of funds appropriated in 1962 and prior years in the separate appropriation item "Construction of facilities". In 1963, funds for construction were included in the appropriations for "Research" and "Plant and animal disease and pest control".

STATUS OF PROGRAM

The 1962 appropriation provided \$800,000 for the construction of two facilities. The status of these items as of December 31, 1962 was as follows:

Columbia, Missouri - \$425,000 authorized for construction of a laboratory for research on the biological control of insects through the use of parasites, predators and diseases. A tract of approximately 10 acres owned by the University of Missouri has been agreed upon by the Department and the Missouri Agricultural Experiment Station as the site for the laboratory, and transfer of title is awaiting final action. The architect is developing final plans and specifications. A construction contract is expected to be awarded in April 1963; thereafter it will require approximately 12 to 14 months to complete the construction.

Florence, South Carolina - \$375,000 authorized for laboratory for conservation farming research on soils of the Atlantic Coastal Plains. The Federal Government now has title, transferred by the Board of Trustees of Clemson College, to approximately 18 acres of land of the Pee Dee Experiment Station, Florence, South Carolina for the construction of the laboratory. The architect is developing final plans and specifications. A construction contract is expected to be awarded in April 1963; thereafter it will require approximately 12 to 14 months to complete construction.

The 1961 appropriation provided \$7,750,000 for construction of 11 research facilities. The status of these facilities as of December 31, 1962, is as follows:

1. Federally-owned land available when construction authorized.

	<u>Amount Authorized</u>	<u>Estimated Completion date</u>
Bushland, Texas - research on conservation farming in Southwest	\$250,000	Completed
Ithaca, New York - plant, soil and nutrition research	500,000	Completed
Auburn, Alabama - tillage machinery research	400,000	Completed
National Arboretum, D. C. - headquarters-laboratory	1,500,000	April 1963

2. Federally-owned land not available when construction authorized.

Note: Except at Lexington, Kentucky where only greenhouses were involved which could be constructed on State-owned land, acquisition of a site had to be determined before a contract could be negotiated for the architect's services; also Government title to the land had to be Federally-approved before a construction contract could be awarded.

Lexington, Kentucky - tobacco research	\$250,000	Completed except for utility con- nections
Pullman, Washington - research on soil problems in Northwest	150,000	April 1963
Athens, Georgia - poultry disease research	950,000	April 1963
Gainesville, Florida - entomology research	a/ 500,000	June 1963
Twin Falls, Idaho - soil and water conservation research related to problems of Snake River Valley	850,000	October 1963
Fargo, North Dakota - research on metabolism of agricultural chemicals in plants, animals, and insects, and sterility techniques for control of insects	2,000,000	April 1964
State College, Mississippi - poultry management research .	400,000	b/

- a/ In addition, \$400,000 representing the proceeds of sale of an entomology research laboratory at Orlando, Florida is available for the construction of this laboratory.
- b/ Bids for constructing were opened November 27, 1962, but exceeded the amount available. It is estimated that 10 months would be required for construction after an acceptable bid is received.

(d) Animal Disease Laboratory Facilities

PROJECT STATEMENT

Project	1962	1963 :(estimated):	1964 :(estimated):
Facilities for animal disease			
research and control a/.....	b/ \$243,749	\$255,601	---
Unobligated balance brought forward ..	-499,350	-255,601	---
Unobligated balance carried forward ..	255,601	---	---
Total appropriation or estimate	---	---	---

a/ Represents obligations. Capital outlay is \$331,309 for 1962, and \$288,602 for 1963. Differences between capital outlay and obligations reflect, primarily, the normal delay between letting contracts and completion of work.

b/ Includes \$166,568 increase in prior year obligations principally for claims paid under the main construction contract which was awarded in fiscal year 1959.

STATUS OF PROGRAM

The Supplemental Appropriation Act, 1957, provided \$16,250,000 for construction of animal disease research facilities. This amount was in addition to the unobligated balance of \$221,079 available from the Supplemental Appropriation Act, 1956, which provided \$250,000 for initial surveys, plans, and specifications.

The National Animal Disease Laboratory has been constructed on a 318-acre tract of donated land near Iowa State University, Ames, Iowa. It was occupied on May 1, 1961. In fiscal year 1962 needed hay storage facilities were provided and in 1963 funds will be used for warehouse and solvent storage facilities, for which a contract has already been awarded, and for expansion of the sewage system.

(e) Establishment of an Entomology Research Laboratory

PROJECT STATEMENT

Project	1962	1963 (estimated)	1964 (estimated)
Facilities for entomology research	- -	\$400,000	- -
Unobligated balance brought forward	-\$400,000	-400,000	- -
Unobligated balance carried forward	400,000	- -	- -
Total appropriation or estimate	- -	- -	- -

STATUS OF PROGRAM

The 1961 appropriation for Salaries and Expenses, Research, Agricultural Research Service, authorized the sale of the Department's Entomology Research Laboratory at Orlando, Florida, and application of the proceeds of sale to the construction of a new laboratory. An additional \$500,000 was provided by the Supplemental Appropriation Act, 1961, under "Construction of Facilities" for the remainder of the estimated cost of new facilities. The Orlando property was sold in 1961 for \$400,000, which is being applied toward the construction of the new laboratory to be located at Gainesville, Florida.

A construction contract was awarded early in fiscal year 1963 and the facilities are expected to be available for occupancy at the close of fiscal year 1963.

(f) Working Capital Fund, Agricultural Research Center

This working capital fund is a continuing operating fund established by the 1951 Agricultural Appropriation Act with an appropriation of \$300,000 to finance the operating costs of certain centralized services and facilities at the Agricultural Research Center pending receipt of reimbursements for such costs from the agencies provided with the services. The integrity of the original appropriation is maintained from year to year by means of these reimbursements.

Statements reflecting the assets and liabilities, and income and expenses, of the working capital fund as of June 30, 1962, as well as estimates for 1963 and 1964, are included in the 1964 Budget.

STATEMENT OF OBLIGATIONS UNDER ALLOTMENTS AND OTHER FUNDS

(Includes only those amounts which, by November 30, 1962, were actually received or programmed for 1963 or 1964. Since work for other agencies is performed on a service basis, at the request of those agencies and for their benefit, it is not practicable in all cases to estimate in advance the amounts to be received.)

Item	Obligations, 1962	Estimated Obligations, 1963	Estimated Obligations, 1964
Allocations and Working Funds			
(Advances from other agencies):			
Agency for International Development -			
For training, consultation and technical assistance activities	\$845,229:	\$1,556,700:	\$1,600,300
Office of Emergency Planning - For			
Emergency preparedness functions	2,302:	20,000:	200,000
Department of State - Plant quarantine			
inspection services, Australia and			
New Zealand	5,250:	5,250:	5,250
Public Works Acceleration, Department			
of Commerce - For accelerated public			
works program	- -	300,000:	- -
Consolidated Working Fund, General,			
Agriculture:			
For civil defense activities	7,376:	- -	- -
For technical assistance under the			
Area Redevelopment Program	94,000:	15,000:	- -
Total, Consolidated Working Fund,			
General, Agriculture	101,376:	15,000:	- -
Total, Allocations and Working Funds ...	954,157:	1,896,950:	1,805,550
Trust Funds:			
Expenses and refunds, inspection and			
grading of farm products:			
1. Inspection and certification of			
animal foods and inedible agricultural			
products in interstate and			
foreign commerce	95,000:	110,000:	112,000
2. Identification and certification			
service for meat and other products	411,939:	429,000:	440,000
3. Contract specification work on			
meat and meat food products	1,123,812:	1,136,000:	1,165,000
4. Food inspection service (meat and			
meat food products)	4,571:	5,000:	5,000
Expenses, feed, and attendants for			
animals in quarantine	65,420:	58,400:	45,000
Miscellaneous contributed funds	468,827:	618,600:	508,500
Prior year advances returned	8,925:	- -	- -
Total, Trust Funds	2,178,494:	2,357,000:	2,275,500

(Continued on next page)

Item	: :Obligations, : 1962	: Estimated :Obligations, : 1963	: Estimated :Obligations, : 1964
Obligations under Reimbursements from	:	:	:
Governmental and Other Sources:	:	:	:
Research	: 1,415,823:	1,774,600:	1,635,200
Plant and animal disease and pest	:	:	:
control	: 805,936:	818,400:	844,800
Meat inspection	: 9,115,315:	9,325,100:	9,661,800
Miscellaneous services to other	:	:	:
accounts	: 112,418:	91,400 :	93,500
Total, Reimbursements	: 11,449,492:	12,009,500:	12,235,300
TOTAL, OBLIGATIONS UNDER ALLOTMENTS AND	:	:	:
OTHER FUNDS	: 14,582,143:	16,263,450:	16,316,350

PASSENGER MOTOR VEHICLES AND AIRCRAFT

The 1964 Budget estimates propose the purchase of 6 additional passenger motor vehicles, including 2 station wagons, and the replacement of 271 such vehicles. Present cars are being fully utilized and are not available to meet the additional need.

Additional Vehicles

The 6 additional passenger motor vehicles will be used at the following locations:

- | | |
|---|--|
| Columbia, Missouri | 1 station wagon will be required in establishing the entomology research to be undertaken at the laboratory which it is anticipated will be completed in fiscal year 1964. The station wagon will be used later by scientists to travel throughout the Central and South Central United States to check on experimental plot studies dealing with insect parasites, predators, insect diseases, etc. in research on biological control of insects. |
| Fargo, North Dakota | 1 car and 1 station wagon will be required in establishing metabolism and irradiation research at the new laboratory at Fargo. In the future they will be used primarily by scientists for travel in connection with studies on the metabolism of agricultural chemicals in insects, plants and animals, and on sterility techniques for insect control. Such travel will be made to check test plots, observe progress in various field localities, and to consult with various interested groups at land-grant colleges, private individuals and others concerned with this program. |
| Fort Robinson and
Hastings, Nebraska | 1 car to be used in connection with beef investigations carried on at Fort Robinson, Nebraska, but will be used most of time in travel at Hastings, Nebraska, where cooperative work on beef investigations is being conducted. |
| Ithaca, New York | 1 car will be needed in connection with additional staffing required to effectively use the new facilities provided in fiscal year 1963. It will be used to provide staff members with transportation in connection with their research on the effect of chemical characteristics of soil upon the chemical composition of plant growth thereon, and, in turn, on the mineral nutrition and health of animals feeding on such herbage. |
| Pullman, Washington | 1 car will be needed in connection with the expanded research in developing efficient soil and water management practices that will improve moisture retention and prevent soil losses on the rolling dryland soils of the Palouse area of the Northwest. The vehicle will be used essentially by the professional staff at field research sites throughout the area. |

Replacements

It is estimated that all of the 271 passenger vehicles to be replaced will either have mileage of more than 60,000, or be 6 or more years old. A detailed justification of the proposed replacements follows:

Research: Replacements would be made of 100 of the 413 passenger motor vehicles operated at field stations engaged in research. These vehicles are used in travel where no public transportation is available, such as to farms, ranches, cooperating experiment stations, etc., and in travel to remote sections of large stations. They are essential for collecting experimental data and materials necessary for facilitating research work.

Plant and Animal Disease and Pest Control: Replacement would be made of 170 of the 685 passenger motor vehicles of which approximately 95 percent are operated in daily farm-to-farm travel in the control and eradication of tuberculosis, brucellosis, screwworms, sheep scabies, cattle tick fever, hog cholera, and various plant pest control programs. About 5 percent are operated in travel on animal and plant quarantine work. They are frequently operated over rough and rugged roads in all kinds of weather. In order to keep them in safe and dependable operating condition, maintenance costs are frequently high. The control and eradication, testing and inspection activities cannot be carried on without them. In most cases, employees who own cars are reluctant to use them for even limited periods because of the hard usage to which they are subjected to this work. The replacements recommended will make it possible for those cars to be replaced which would be uneconomical to continue in operation because of their age, mileage, or both.

Agricultural Research Center: Replacement would be made of 1 of the 5 passenger motor vehicles.

Age and Mileage Data

Age and mileage data for passenger carrying vehicles on hand as of June 30, 1962:

Age-Year Model	Age Data		Lifetime Mileage (thousands)	Mileage Data	
	Number of Vehicles	Percent of Total		Number of Vehicles	Percent of Total
1954 or older	6	-	Over 100	28	2
1955	21	2	80-100	108	10
1956	63	6	60-80	168	15
1957	135	12	40-60	277	26
1958	217	20	20-40	280	26
1959	128	12	Under 20	235	21
1960	227	21			
1961	167	15			
1962	132	12			
Totals	1,096*	100		1,096*	100

* Excludes 15 vehicles used in foreign countries.

AIRCRAFT

Replacements

Authority is requested to replace two airplanes used by technicians in investigating and demonstrating the use of special equipment for suppression of destructive insects attacking crops or for applying agricultural chemicals. In the one case, it is proposed to replace a Cessna 180, a 1958 model, in order to upgrade equipment and decrease operating costs. Also it should be replaced for safety. The other replacement authority is requested so that it will be available in case of emergency. Planes used for agricultural purposes rapidly become obsolete and uneconomical to repair and are subject to many mishaps. This replacement will not be made, however, if it is found practical and economically feasible to retain the present equipment.

COOPERATIVE STATE EXPERIMENT STATION SERVICE

Purpose Statement

The Cooperative State Experiment Station Service was established by Secretary's Memorandum No. 1462 dated July 19, 1961, and Supplement 1, dated August 30, 1961 under Reorganization Plan No. 2 of 1953. The Service carries out the following functions:

1. Administration of the Agricultural Experiment Stations Act of August 11, 1955, (Hatch Act of 1887, as amended, 7 U.S.C. 361a-361i);
2. Payments under Section 204(b) of the Agricultural Marketing Act of 1946 (7 U.S.C. 1623) to State agricultural experiment stations; and
3. Grants to land-grant colleges or agricultural experiment stations and other State supported colleges and universities authorized under the Cooperative Forestry Research Act of October 10, 1962, (P.L. 87-788).

The Service administers research grants to State agricultural experiment stations under the Hatch Act and the Agricultural Marketing Act; reviews and approves in advance each individual research proposal financed in whole or in part from the Federal-grant funds to assure their efficient and legal use; maintains close advisory relations with the experiment stations with reference to the planning, coordination, quality, and conduct of the research for which funds are expended; and makes field examinations of the research and expenditures of each experiment station under the grant fund acts.

The Service is also responsible for administering a program of grants for cooperative forestry research. In accordance with Section 2 of the Act, eligible institutions are (a) land-grant colleges or experiment stations and (b) other colleges and universities offering graduate training in the sciences basic to forestry and having a forestry school.

On November 30, 1962, there were 100 full-time and one part-time Cooperative State Experiment Station Service employees in Washington.

	<u>Estimated Available, 1963</u>	<u>Budget Estimate, 1964</u>
Appropriated funds:		
Payments to Agricultural Experiment Stations:		
Hatch Act	\$36,223,221	\$37,193,221
Section 204(b) Agricultural Marketing Act	500,000	500,000
Grants for forestry research	- -	1,000,000
Federal Administration	1,292,779	1,379,779
Penalty Mail	<u>250,000</u>	<u>310,000</u>
Total	<u>38,266,000</u>	<u>40,383,000</u>

Payments and Expenses

Appropriation Act, 1963	\$38,207,000
Proposed transfer, 1963 for increased pay costs	59,000
Base for 1964	38,266,000
Budget Estimate, 1964	40,383,000
Increase	<u>+2,117,000</u>

SUMMARY OF INCREASES, 1964

To strengthen research programs at the agricultural experiment stations	+1,000,000
To initiate a program of grants for forestry research	+1,000,000
For postal costs pursuant to Public Law 87-793	+60,000
For pay act costs pursuant to Public Law 87-793	+57,000
Increase	<u>+2,117,000</u>

PROJECT STATEMENT

Project	1962	1963 (estimated)	Increases		1964 (estimated)
			Increased:		
			Pay and Postal Costs (P.L. 87-793):	Other	
1. <u>Payments to agricultural experiment stations:</u>					
a. For agricultural research under the Hatch Act <u>a/</u>	\$34,223,848	\$36,223,221	- -	+\$970,000	\$37,193,221
b. For marketing research under the Agricultural Marketing Act	500,000	500,000	- -	- -	500,000
Total, Payments to agricultural experiment stations	34,723,848	36,723,221	- -	+970,000	37,693,221
2. <u>Grants for forestry research</u>	- -	- -	- -	+1,000,000	1,000,000
3. <u>Federal administration</u>	1,176,911	1,292,779	+\$57,000	+30,000	1,379,779
4. <u>Penalty Mail</u>	250,000	250,000	+60,000	- -	310,000
Total obligations	36,150,759	38,266,000	+117,000	+2,000,000(1)	40,383,000
Unobligated balance	56,241	- -	- -	- -	- -
Total increased costs (P.L. 87-793):					
Pay costs	(- -)	(59,000)	(+57,000)	(+2,000)	(118,000)
Postal costs	(- -)	(600)	(+60,600)	(- -)	(61,200)
Total available or estimate	36,207,000	38,266,000	+117,000(2)	+2,000,000	40,383,000
Transferred from "Reimbursement to Commodity Credit Corporation for costs of special milk program" for increased pay costs	- -	-59,000			

(Continued on next page)

Project	1962	1963 (estimated)	Increases		1964 (estimated)
			Increased:		
			Pay and	Other	
			Postal Costs		
			(P.L. 87-793):		
<hr/>					
Transfers in 1963					
estimates from:					
"State Experiment Sta-					
tions, Agricultural					
Research Service":					
Payments to States					
and Puerto Rico	-35,553,000:	- -			
Penalty mail	-250,000:	- -			
"Salaries and					
expenses, Agricul-					
tural Research					
Service, research" .	-404,000:	- -			
Total appropriation or					
estimate	- -	38,207,000:			

a/ Excludes the three percent of the increases provided under this item in 1962 and 1963 and proposed for 1964, which, under the Act of August 11, 1955 is available for Federal Administration, and is included in that item below.

b/ Includes \$500 estimated to be transferred to "Salaries and expenses, General Administration," during fiscal year 1963 for the Office of the Inspector General.

INCREASES

(1) The increase of \$2,000,000 is composed of:

(a) An increase of \$1,000,000 (Hatch Act) to strengthen research programs at the State Agricultural Experiment Stations.

Need for Increase: Appropriations under the Hatch Act serve essential functions both in financing research and in stimulating additional funds for science at the State stations from State appropriations. For 1963 it is estimated that the States will provide \$3.80 for each dollar of Federal-grant funds.

Hatch funds historically have been used for direct research costs such as salaries, labor, and supplies with the stations absorbing the costs of providing buildings, facilities, and administration. A stable source of funds, such as has been provided under the Hatch program over the years, has helped the stations develop and maintain a sound nucleus of well-trained scientists.

The extensive program of agricultural research being conducted by the agricultural experiment stations has as its objectives a more prosperous and efficient agriculture--the cornerstone of a strong, prosperous, and free America. Differences in soils, climate, market outlets, and other factors create problems that frequently require a cooperative approach involving several disciplines.

The State stations recognize that research programs, to be most effective, must include participation in regional and national programs. The Federal-grant funds have provided a powerful incentive in bringing about interstate cooperation and Federal-State collaboration in the planning and conduct of

this overall program of agricultural research. The Regional research program, funds for which are provided under the Hatch Act, has played a significant part in increasing such cooperative research. The Central Research Fund, established in fiscal year 1962 as a part of the Regional Research Fund, provides a means of meeting a Nationwide research problem.

America's position of world pre-eminence in agriculture will be maintained only if research is strongly supported. Agricultural research is constantly changing to meet new problems and to apply new procedures and techniques to the solution of both new and old problems. This dynamic program must be geared to meet the needs of the American farmer, the consuming public, and the Nation.

Research designed to maintain our agricultural resources, to point out desirable shifts in agricultural production, to conserve and use wisely our land and water resources, and to expand knowledge of human nutrition are all important aspects of the research program now being conducted by the State Agricultural Experiment Stations with funds supplied through the Federal-grant program. These are all parts of a program of research designed to meet both the immediate and the long-range problems of agriculture. They are part of a balanced approach to the applied and to the basic research needs of the Nation. They are part of a system of agricultural research which utilizes the talents, the facilities, and the geographic distribution of our Land-Grant institutions and which is responsive to the requirements of both the farmer and the consumer.

Basic research designed to develop broader understanding of the sciences important to agriculture has been a part of the Hatch program since its beginning in 1887. Basic research develops new knowledge about a science and extends the area in which applied research can work effectively toward the solution of specific problems. It is the foundation on which our progress in science or technology depends. In the setting of the Land-Grant University, many disciplines can be brought to bear on the basic principles that influence plant, animal and human functions, and those underlying sociological and economic processes and adjustment. Modern instrumentation is providing the means of probing deeper into fundamental laws and principles. The experiment stations have made their most permanent contributions to agricultural progress and human welfare through the development of new basic scientific knowledge. Currently about 34 percent of the total Hatch program is basic research. Although the proportion of basic research has been increasing at a modest rate, further advances in many sectors of agriculture are being impeded by inadequate knowledge of natural laws and principles. Proposed research in fiscal year 1964 provides for an increased effort in basic research.

Specific research proposed for 1964 is discussed under the following five general headings:

Improving Market Efficiency and Expanding Utilization of
Agricultural Products

Reducing Farm Costs and Increasing Returns

Conservation and Use of Natural Resources

Agricultural Adjustment and Rural Development

Human Nutrition

Improving Market Efficiency and Expanding Utilization of Agricultural Products

Market efficiency. The agricultural experiment stations have been concerned with marketing and related problems throughout their history. Research is needed on the organization and structure of markets. Continuing changes are occurring in interfirm relationships, in the size of individual firms, marketing technology, financing, pricing, and management strategy. We need to know who makes significant decisions, where these decisions are made, their impact on market organization and structure and resulting effects on returns to farmers and prices to consumers.

Basic research is needed on factors affecting market prices for farm products, including the influences of scale, integration, cost structures, and extent of competition as these affect bargaining power and price determination. Such information is essential if farmers are to know the price they may expect from different levels of production and cooperatives and other marketing firms are to be able to plan for efficient operation. Furthermore, adequate basic knowledge of factors affecting price relationships is essential to evaluating the costs and impacts of alternative farm policies and programs.

The State Station Directors and their staffs plan to expand and strengthen nearly all phases of marketing research if additional funds become available. Farmers, marketing firms, government agencies, educators, and consumers all continue to request information concerning services, processes, and functions performed, as well as the channels of flow from producers to consumers. This type of information is basic to all marketing research. Legislators and policy makers want improved and current data on marketing margins for foods and fibers.

Research dealing with costs and efficiency would be strengthened. Size and type of plant, productivity of the worker, managerial efficiency, relative profitability of alternatives in the product and service mix, quality of products produced and effectiveness of sales become increasingly important as cost rates increase and competition for the consumer's dollar becomes keener.

Consumer preference and acceptance research would be expanded. Additional funds would permit undertaking more basic research to develop objective measures of quality and the price differentials and systems needed to provide an incentive for the production of quality products.

Utilization of agricultural products. Utilization research is concerned with finding and developing new or improved uses for agricultural commodities. Research in this area becomes more important as advances are made in production efficiency.

The increase would permit several states to initiate basic research on food processing problems involving heat transfer, fluid flow, and the use of forms of energy, other than heat. Problems in the area of food flavors must be solved before full advantage may be taken of changing trends in consumer tastes. Evaluation of the basic genetic make-up of food plants and animals from the standpoint of taste, quality and nutritive value is a continuous process. Basic information is needed to determine the mechanism

and means of preventing the biochemical reactions which occur during drying or after high-heat treatment of dairy and other food products. Fundamental protein research will be initiated so that new products may be developed for food or for industrial use.

Research would begin on new manufacturing techniques and their influence on physical, chemical, and microbiological conditions of food products. Several bacteriological studies would be initiated which concern the many public health aspects of processed foods.

New or specialized crops, minor constituent studies, interactions during processing of agricultural crops, and quality and quantity studies are other areas where utilization research is in progress and additional basic work is needed. New antibiotics, specialized compounds, physiologically active compounds, feed supplements, and inhibitors are objectives of this research. Research aimed at increasing the utilization of farm products for non-food and industrial uses would be strengthened.

The following are examples of specific research that are planned:

Modification of cereal starches to broaden the range of industrial application.

Microbiological fermentation to produce new products.

Use of cottonseed meal, soybeans, and whey in animal feeds.

Search for new or improved industrial products and by-products, including chemicals, derived from animal, plant and forest materials.

Fat degradation in meats, dairy products and other fat-containing materials.

Reducing Farm Costs and Increasing Returns.

While it is anticipated that no increase in funds will be devoted to expanding this area of research, some shifts in emphasis will be made, particularly to increase research on control of diseases, weeds, and insects and other pests. Studies of selectivity, metabolism, and residue problems of chemicals will be expanded as will research on alternative methods of pest control such as cultural practices and biological control.

The annual national loss in agricultural production due to weeds and the cost of weed control is estimated to be as high as \$3.8 billion. Basic research on the life cycle and physiology of weeds is critically needed so that any weaknesses in the reproduction, spread and survival characteristics of weed species can be exploited in developing methods for their control.

We must study sequences of biochemical changes and identify enzymes, hormones, and other catalysts, so as to better understand plant processes. Radioactivity in its several forms will be used more and more to understand nutrient movement, the movement of systemic fungicides, bactericides, insecticides and nematocides through the plant to its various parts.

Not enough is known about the persistence of pesticide residues, their decomposition products, or their effect on the quality of crops. Research on residues implies more than just an analysis for the chemical applied to the crop or animal. A chemical test for the material which was originally applied will not give a reaction to other toxic materials that may have been developed from the material that was applied. Answers to this complex problem require studies to determine what happens to a chemical applied on a leaf or ingested by animals, the toxicological pathways a chemical takes through a biological system, its mode of action, metabolic fate and phytotoxic effects of chemicals on both plants and animals. There is growing use at the State stations of bio-assays of materials that have been treated with pesticides. This technique has a high degree of sensitivity.

Research on insects will place greater emphasis on insect ecology and physiology. We must learn why European corn borers, for example, prefer corn as their host plant, codling moths - fruits, and the boll weevils - cotton. This will require greater use of controlled environmental studies to determine how and why insects respond to specific environmental stimuli. Biometric studies are needed to learn responses to combinations of stimuli, physiological reactions to insects resulting from environmental stresses, and nutritional requirements of insects.

Increases in information on plant diseases will depend on basic research done to understand why a plant becomes diseased. Currently there are only limited chemical and biological methods available to control bacterial, viral or soil-borne diseases. Basic knowledge of the disease producing organism in relation to its host and the mechanism of action of fungicides is needed. Research on the cellular and subcellular physiology of plant pathogenic microorganisms must be expanded to better understand how host cells are injured and destroyed.

Conservation and Use of Natural Resources.

Each of the State Agricultural Experiment Stations has recognized that wise use of soil and water resources is essential for continuing national welfare and is engaged in research in this field. Problems of major importance occur in soil physics, chemistry and mineralogy, soil classification and engineering phases of soil and water conservation, drainage, irrigation, and watershed hydrology.

In order to conserve our water supply for essential uses, expanded research is proposed on new evaporation suppressants; on techniques for controlling seepage; on more effective above and below ground storages; on means of reducing plant transpiration; and on methods of reducing biologic and/or chemical contamination of water to permit its reuse for agricultural purposes. Research to develop more clearly the basic scientific laws governing the hydrologic cycle is especially needed.

There is a growing recognition of the interrelationships in the entire soil-water-plant environment--the eco-system. Basic research is needed on all aspects of water intake and movement in the soil, water movement into plants, and water in plant metabolism. Research on bio-chemical control of small, valve-like openings in the leaves of plants, known as stomata, shows promise of conserving moisture use by plants through reduction in evapo-transpiration. Work on this approach needs to be expanded.

Almost one billion acres in the United States is classified as rangeland. Expanded research at the State stations is needed on increased water conservation on these areas.

Stream, lake and pond pollution limits marine life and may render the waters unfit for other beneficial uses. Expanded research effort will be directed to procedures for the abatement and control of pollution.

A problem area most in need of expanded research relates to competition for available water. Vast increases in the demand for water for industrial, domestic and recreational uses are taking place. The relative productivity of water in agricultural uses needs to be known so that sound public decisions as to allocation of water among competing uses can be made. Joint economic and legal research is needed to determine the degree of permanence which should be attached to new water rights to assure economic development and at the same time preserve a degree of public control that will assure sound economic water use in the future.

Agricultural Adjustment and Rural Development.

There is an urgent need for economic studies to evaluate the costs and benefits of alternative public policies and programs designed to raise and stabilize farm prices and incomes. Further insight is needed into what farmers really want and expect from government programs. Personnel of the State Agricultural Experiment Stations, with their thorough understanding of both national and local situations are in a uniquely favorable position to conduct such studies objectively.

Closely related to the impact of public programs is the need for better understanding of resource adjustments which are continually being made and which will be affected by changes in farm programs. These include the size and number of farms, the use of capital, minimum farm size needed to achieve selected income levels, the all-important matter of the number of people in agriculture, changes in land use, and the effects of tenure institutions and credit policies.

As farming changes, human adjustments must be made. We need research to find and develop new opportunities for displaced workers and to help ease the economic and organizational problems that arise in rural areas in regard to such public services as health, water, sewage disposal, and schools. The Rural Area Development Program urgently needs the results of research along the above and related lines.

We need more research to measure the impacts and consequences of economic, political, and technological changes on the operation and functioning of family units and of community organizations and institutions.

The entire problem of individual and group goals, values, and decision-making processes of the rural population requires intensive investigation.

Research on opportunities to enter farming and new opportunities for those who must or will remain in farming, especially in low income areas should be emphasized.

In the interest of further improving family housing, attention will be given to environmental control with concern for sunlight, temperature and humidity problems. Other aspects awaiting attention with the availability of additional funds include revised building codes, house design and criteria for installation of facilities, socio-economic aspects, adaptation of houses for different stages in the family cycle, and problems contributing to the slow rate of housing improvement in rural areas.

Human Nutrition.

In research on human nutrition, the role of the State Experiment Stations is unique. They have available a large student population to provide essential human subjects for such research. They also have available a body of graduate assistants and thus indirectly to assist in the training of new research personnel. Human nutritional research must, in the final analysis, depend on the reactions of an adequate number of human test subjects to confirm chemical, microbiological, and laboratory studies conducted with laboratory animals and in some instances to evaluate the special and unique aspects of the nutrition of the human.

Some fifty nutrients--amino acids, fatty acids, minerals, and vitamins--are now considered important to human health. With additional support, research will be expanded to explore more fully the functions of these nutrients and the interrelationships among them and body hormones and enzymes. This basic approach will be used, for example, in studies of the effects of dietary constituents and hormones on the metabolism of fats and other lipids in laboratory animals and man. Investigations of the effects of vitamins and hormones on the utilization of amino acids from proteins will be initiated.

The most serious nutritional deficiency in the world today is that of good quality protein. There will be expanded efforts, therefore, to determine the nutritive value of various plant proteins and how these can be supplemented by combination with other plant proteins or with amino acids. These studies will include metabolic measurements of the physiological response of animals and humans, in different stages of the life cycle and under several stress conditions, to diets containing these plant proteins and supplements.

Present estimates of human requirements for nutrients are not well documented for some age groups, particularly preadolescent and adolescent children, and aging adults. New studies of the nutrient requirements of adolescent children and aging adults need to be initiated.

Federal Administration.

The Hatch Act, as amended by the Act of August 11, 1955 provides that "Three percent shall be available to the Secretary of Agriculture for administration of this Act." These funds are needed by the Cooperative State Experiment Station Service to effectively carry out the responsibilities of the Service which include coordination of research effort among the States as well as between the States and the Department, research evaluation, review, development of research standards, and participation in the planning of regional research.

To effectively perform the functions assigned, the staff of the Service should include adequate scientific competence in all the major areas of work represented by the research scientists at the State agricultural experiment stations. Three percent, or \$30,000 of the increase, would be used to add an Animal Physiologist and Poultry Nutritionist to the technical staff in order to provide much needed scientific expertise in these important research areas. Funds currently available are not adequate to provide needed competence in these fields without sacrificing coverage of other equally important fields. The proposed 1964 budget does not provide an increase in funds for administration of the new function, the Federal-grant program for Cooperative Forestry Research as authorized by P.L. 87-788 approved October 10, 1962. While a portion of the responsibilities for the initiation of this program can be handled by the present staff, it would be necessary to add a technician with competence in forestry research to the staff and absorb such costs within available funds.

Plan of Work: The increase of \$1,000,000 requested for payments to agricultural experiment stations under the Hatch Act, as amended, would be used to initiate, strengthen, or expand research in the five fields described above. Seventy-two percent of the increase, or \$720,000, would be distributed to the agricultural experiment stations in each of the States and Puerto Rico in accordance with prescribed formulas in the Act and would be matched in full. Twenty-five percent, or \$250,000, would be made available for the program of regional cooperative research authorized by section 3(c)3 of the Hatch Act, as amended. Under the Regional Research program the State Agricultural Experiment Stations investigate broad research problems of such magnitude and scope that it would be difficult if not impossible for a single State station to undertake them. In all cases the research is cooperative between at least two State stations. Most such projects require participation in the planning and conduct of research by several State Agricultural Experiment Stations and one or more research units of the U.S. Department of Agriculture. Three percent of the increase, or \$30,000, would be used to strengthen the technical staff required to help plan, coordinate, and review the overall research program so as to obtain the maximum benefit of the increase.

Distribution of the increase for 1963 by States and fields of research are as follows:

Table 1

Estimated Allotments to State Agricultural
Experiment Stations Under \$1,000,000 Increase

Alabama	\$18,212	New Mexico	\$6,511
Alaska	4,621	New York	21,365
Arizona	6,382	North Carolina	31,632
Arkansas	14,778	North Dakota	9,582
California	20,100	Ohio	25,548
Colorado	8,419	Oklahoma	12,710
Connecticut	6,951	Oregon	9,589
Delaware	5,008	Pennsylvania	25,543
Florida	11,907	Puerto Rico	24,362
Georgia	19,645	Rhode Island	4,541
Hawaii	4,820	South Carolina	16,920
Idaho	7,993	South Dakota	9,622
Illinois	23,324	Tennessee	22,641
Indiana	21,025	Texas	27,850
Iowa	22,108	Utah	5,765
Kansas	13,771	Vermont	5,941
Kentucky	21,848	Virginia	19,456
Louisiana	13,802	Washington	11,179
Maine	7,019	West Virginia	11,530
Maryland	9,912	Wisconsin	20,759
Massachusetts	8,544	Wyoming	<u>5,378</u>
Michigan	21,768	Subtotal	720,000
Minnesota	20,725	Regional	
Mississippi	20,218	Research Fund	250,000
Missouri	20,584	Administration	<u>30,000</u>
Montana	7,431	Total	<u>1,000,000</u>
Nebraska	12,596		
Nevada	4,503		
New Hampshire	5,450		
New Jersey	8,112		

Table 2

Estimated Distribution of Federal-Grant Payments to States by
Fields of Research at State Agricultural Experiment Stations,
Fiscal Year 1964
(In thousands of dollars)

<u>Field of Research</u>	<u>1964</u>
I. Improving Market Efficiency and Expanding Utilization	
A. Marketing costs, margins, and efficiency	\$74
B. Evaluation, maintenance and improvement of product quality	71
C. Merchandising, market outlets and factors affecting prices	61
D. Expanding utilization of agricultural products	102
	<u>308</u>
II. Reducing Farm Costs and Increasing Returns	- -
III. Conservation and Use of Natural Resources	
A. Soil conservation and management	129
B. Hydrology, water conservation and management	197
C. Forestry	90
D. Range	20
E. Wildlife	1
F. Economics of conservation and use of natural resources	44
	<u>481</u>
IV. Agricultural Adjustment and Rural Development	<u>94</u>
V. Human Nutrition	<u>87</u>
Subtotal	970
Federal Administration	<u>30</u>
Total	<u>1,000</u>

(b) An increase of \$1,000,000 to initiate a program of grants for cooperative Forestry Research.

Need for Increase: Public Law 87-788, approved October 10, 1962, authorizes grants to land-grant colleges or state agricultural experiment stations and to other public colleges and universities offering graduate training in the sciences basic to forestry and having a forestry school.

The Federal grants would have to be matched from non-Federal sources. Legislative history and the hearings on forestry research clearly show that the current research programs of the Forest Service and of the State-supported

colleges and universities are entirely inadequate to meet present or future needs. The strengthening of cooperative forestry research effort is essential to provide basic information on forestry problems and to provide opportunity for developing scientists badly needed in both public and private forestry research programs.

Experience has shown that cooperative assistance of the kind requested has resulted in program expansion by the cooperators in amounts much greater than the Federal contribution.

President Kennedy, in his message of March 16, 1961 on American agriculture, stated:

"One of our most important natural resources, and one of our most neglected, is our forest land."

He further stated that one of the measures needed is to "expand forestry research, too long neglected."

The requested increase would be coordinated with existing forestry research and would in no way duplicate existing research under the Hatch Act or Forest Service research programs.

The emphasis of the new program would be upon fundamental research in many aspects of forestry and upon strengthening the graduate training function.

A major need which has been growing in importance is to provide early research answers to show how we can do a better job of intercepting, storing and releasing gradually our precious water resource. Research in this area needs to be greatly expanded in the years immediately ahead.

To meet the demand now anticipated for greatly increased quantities of wood products from domestic production will require a wide range of research-dependent improvements in forest management productivity and efficiency, including genetic, physiological, soils, protection, engineering, economic, and even sociological aspects. Much of this effort should be directed to increasing forest productivity from the large areas which are in small private holdings, and in low quality hardwood stands generally. Enhancing the quality and usefulness of wood and its marketing deserve much attention.

Research conducted under the grants would also aid in the development of outdoor recreational facilities and policies, the handling of wildlife and wild lands on the most understanding basis possible and the efficient and protective use of the grazing resource.

The program would:

Increase basic research needed to uncover much needed information about underlying phenomena which must be known before efficiencies can be improved.

Increase cooperation between departments within grant recipient institutions and with government agencies and private organizations, where research objectives and accomplishment would be improved.

Emphasize projects which contribute to rural area development in forest regions.

Develop close association of research with graduate training through employment of graduate students to do research under supervision thus enhancing graduate training and contributing to much needed strengthening of the forestry research force.

Plan of Work: The funds available for cooperative forestry research grants would be allotted to eligible institutions on an apportioned basis. The State would certify the institutions eligible for assistance and determine the proportionate amount to be given to each from the amount apportioned to the State. Apportionment among the States and administrative expenses would be determined by the Secretary after consultation with a board of not less than seven officials of the State-certified eligible institutions chosen by a majority of such institutions. Federal grants would have to be matched from non-Federal sources.

Research proposals will be carefully reviewed by CSESS to ascertain that they meet significant needs, that adequate personnel and facilities are available, and that the proposed work is effectively coordinated with related research being conducted by other institutions, agencies, or organizations.

(2) An increase of \$117,000 for pay and postal costs pursuant to P.L. 87-793, consisting of:

(a) An increase of \$57,000 consisting of \$22,000 to provide for full-year costs of the first step of the pay increase pursuant to P.L. 87-793 and \$35,000 for the fiscal year 1964 cost of the additional increase effective January 5, 1964.

(An overall explanation of increases for pay act costs is included in the Preface to these Explanatory Notes in Volume 1.)

(b) An increase of \$60,000 for additional postal costs pursuant to P.L. 87-793.

(An overall explanation of increases for postal costs pursuant to Public Law 87-793 is included in the Preface to these Explanatory Notes in Volume 1.)

STATUS OF PROGRAM

General: This appropriation provides the Federal Government's contribution to the State and Puerto Rican agricultural experiment stations, established pursuant to the provisions of the Hatch Act of 1887.

The State agricultural experiment stations conduct research and experiments along lines authorized by the Hatch Act, as amended, on the problems constantly encountered in the development of a permanent and sustaining agriculture and in improvement of the economic and social welfare of rural families. Because of differences in climate, soil, market outlets, and other local conditions, each State has distinct problems in the production and marketing of crops and livestock. The farmers in the individual States naturally look to their State agricultural experiment stations for solution of the State and local problems and, in recent years, have requested increased services to help meet changing conditions.

Research programs at the State stations, to be most effective, include participation in regional and national programs. Joint attack by a group of State stations is the most effective and often the only practical approach to problems of common interest. The stations, to an ever increasing extent, are acting together as regional groups to provide cooperative coordinated attacks on problems of regional and national interest. In a similar manner, the research programs of the State agricultural experiment stations and the Department of Agriculture are supplementary and interdependent.

The Federal-grant funds constitute a powerful force in bringing about inter-State cooperation and Federal-State collaboration in the planning and conduct of this overall program of agricultural research. Therefore, the full impact of the Federal-grant funds cannot be fully evaluated solely on the basis of the amount of funds provided.

Research at State stations during the fiscal year 1962 included approximately 6,263 specific lines of research financed wholly or in part by Federal-grant funds and about 6,922 lines of research under non-Federal funds. These lines of research are continued as long as they are productive. Approximately 16% of the research program passes its point of maximum productiveness annually and is replaced by new research on pressing problems.

Distribution of Payments: The Hatch Act, as amended on August 11, 1955, provides that the distribution of Federal payments to States for fiscal year 1955 shall become a fixed base and that any sums appropriated in excess of the 1955 level shall be distributed in the following manner:

- 20% shall be allotted equally to each State.
- not less than 52% shall be allotted to the States as follows:
 - one-half in an amount proportionate to the relative rural population of each State to the total rural population of all States, and
 - one-half in an amount proportionate to the relative farm population of each State to the total farm population of all States.

(These populations shall be determined by the last preceding decennial census current at the time each such additional sum is first appropriated.)

-not more than 25% shall be allotted to the States for cooperative research in which two or more State agricultural experiment stations are cooperating to solve problems of the agriculture of more than one State.

-3% shall be available to the Secretary of Agriculture for the administration of this Act.

The amended Act also provides that any amount in excess of \$90,000 available for allotment to any State, exclusive of the regional research fund, shall be matched by the State out of its own funds for research, and for the establishment and maintenance of facilities necessary for the prosecution of such research.

The amended Hatch Act retains the requirement for marketing research as it existed in fiscal year 1955 and provides that 20% of the funds appropriated in excess of the 1955 appropriations shall be used for conducting marketing research projects approved by the Department of Agriculture. In addition, Section 204(b) of the Agricultural Marketing Act also authorizes payments to State agricultural experiment stations on a matching basis for cooperative projects in marketing research.

Table 1 shows the distribution of Federal payments to States for research at State agricultural experiment stations for the fiscal year 1962. Table 2 shows the appropriations for State Experiment Stations for the fiscal year 1962 and estimated for fiscal 1963 and 1964. Table 3 shows the estimated distribution of Federal funds by fields of research for fiscal year 1963.

TABLE 1

FISCAL YEAR 1962

Distribution of Federal Payments to States and Non-Federal Funds for Research
at State Agricultural Experiment Stations

State	Hatch Act, As Amended	Section 204(b) Agricultural Marketing Act	Total Federal-Grant Funds	Non-Federal Funds	Grand Total
Payments to States and					
Puerto Rico:					
Alabama.....	\$ 787,477	\$ --	\$ 787,477	\$ 2,367,820.59	\$ 3,155,297.59
Alaska.....	216,270	10,400	226,670	341,539.00	568,209.00
Arizona.....	280,934	6,000	286,934	2,214,274.75	2,501,208.75
Arkansas.....	660,972	2,500	663,472	2,430,674.64	3,094,146.64
California.....	746,520	10,500	757,020	14,970,986.60	15,728,006.60
Colorado.....	345,264	5,000	350,264	1,686,060.00	2,036,324.00
Connecticut.....	300,011	3,500	303,511	1,414,554.29	1,718,065.29
Delaware.....	230,185	4,000	234,185	555,410.52	789,595.52
Florida.....	443,770	11,000	454,770	5,835,442.21	6,290,212.21
Georgia.....	820,709	13,450	834,159	3,097,381.15	3,931,540.15
Hawaii.....	261,049	4,500	265,549	1,414,517.31	1,680,066.31
Idaho.....	307,573	--	307,573	1,239,393.59	1,546,966.59
Illinois.....	775,076	5,550	780,626	3,669,472.81	4,450,098.81
Indiana.....	679,133	35,000	714,133	2,650,314.14	3,364,447.14
Iowa.....	679,161	28,250	707,411	4,040,157.90	4,747,568.90
Kansas.....	498,222	27,260	525,482	2,727,840.45	3,253,322.45
Kentucky.....	814,792	18,000	832,792	2,217,270.59	3,050,062.59
Louisiana.....	582,099	7,700	589,799	3,765,028.74	4,354,827.74
Maine.....	316,527	26,000	342,527	545,779.02	888,306.02
Maryland.....	384,286	12,666	396,952	1,429,985.75	1,826,937.75
Massachusetts.....	357,686	--	357,686	924,234.82	1,281,920.82
Michigan.....	741,422	84,250	825,672	3,187,415.17	4,013,087.17
Minnesota.....	658,466	--	658,466	3,797,252.64	4,455,718.64
Mississippi.....	799,674	5,000	804,674	1,992,056.18	2,796,730.18
Missouri.....	726,339	53,000	779,339	2,322,754.87	3,102,093.87
Montana.....	299,017	4,750	303,767	1,210,214.38	1,513,981.38
Nebraska.....	444,288	19,300	463,588	2,805,010.51	3,268,598.51
Nevada.....	214,726	--	214,726	388,112.40	602,838.40
New Hampshire.....	254,590	--	254,590	298,419.70	553,009.70
New Jersey.....	350,201	9,150	359,351	2,434,081.60	2,793,432.60
New Mexico.....	297,896	--	297,896	678,555.40	976,451.40
New York.....	759,694	--	759,694	6,729,297.80	7,488,991.80
North Carolina.....	1,085,247	19,400	1,104,647	3,083,021.95	4,187,668.95
North Dakota.....	357,406	--	357,406	1,765,630.53	2,123,036.53
Ohio.....	879,621	12,000	891,621	3,012,135.63	3,903,756.63
Oklahoma.....	562,171	--	562,171	2,211,214.69	2,773,385.69
Oregon.....	391,060	21,500	412,560	3,923,768.43	4,336,328.43
Pennsylvania.....	963,152	--	963,152	2,235,219.16	3,198,371.16
Puerto Rico.....	746,516	--	746,516	1,838,431.77	2,584,947.77
Rhode Island.....	223,958	--	223,958	288,134.86	512,092.86
South Carolina.....	645,603	--	645,603	1,330,538.72	1,976,141.72
South Dakota.....	354,926	1,364	356,290	1,175,748.08	1,532,038.08
Tennessee.....	824,272	--	824,272	1,531,917.18	2,356,189.18
Texas.....	1,093,376	9,900	1,103,276	4,870,694.86	5,973,970.86
Utah.....	267,727	--	267,727	937,436.93	1,205,163.93
Vermont.....	266,023	--	266,023	239,162.59	505,185.59
Virginia.....	728,497	--	728,497	2,263,900.31	2,992,397.31
Washington.....	437,354	18,000	455,354	3,516,387.32	3,971,741.32
West Virginia.....	551,395	2,000	553,395	666,739.33	1,220,134.33
Wisconsin.....	671,105	4,110	675,215	5,087,316.00	5,762,531.00
Wyoming.....	241,329	5,000	246,329	795,460.63	1,041,789.63
Total.....	27,324,767	500,000	27,824,767	126,154,168.49	153,978,935.49
Regional Research Fund.....	6,899,081	--	6,899,081	--	6,899,081.00
Administration.....	1,176,911	--	1,176,911	--	1,176,911.00
Unobligated balance.....	56,241	--	56,241	--	56,241.00
Subtotal.....	35,457,000	500,000	35,957,000	126,154,168.49	162,111,168.49
Penalty Mail:					
Reimbursement to Post					
Office Department for					
penalty mail costs of					
State experiment station					
directors.....	250,000	--	250,000	--	250,000.00
Grand Total.....	\$35,707,000	\$500,000	\$36,207,000	\$126,154,168.49	\$162,361,168.49

Table 2

Appropriations for Cooperative State Experiment Station Service

Fiscal Years 1962 - 1964

State	Fiscal Year: 1962	Fiscal Year: 1963 (estimated)	Fiscal Year: 1964 (estimated)
1. <u>Payments to Agricultural</u> <u>Experiment Stations</u>			
a. For agricultural research under the Hatch Act:			
(1) Distributed by formula:			
Alabama.....	\$787,477	\$824,994	\$843,206
Alaska.....	216,270	225,788	230,409
Arizona.....	280,934	294,081	300,463
Arkansas.....	660,972	691,415	706,193
California.....	746,520	787,926	808,026
Colorado.....	345,264	362,607	371,026
Connecticut.....	300,011	314,441	321,392
Delaware.....	230,185	240,501	245,509
Florida.....	443,770	468,299	480,206
Georgia.....	820,709	861,177	880,822
Hawaii.....	261,049	270,979	275,799
Idaho.....	307,573	324,038	332,031
Illinois.....	775,076	823,124	846,448
Indiana.....	679,133	722,444	743,469
Iowa.....	679,161	724,704	746,812
Kansas.....	498,222	526,591	540,362
Kentucky.....	814,792	859,798	881,646
Louisiana.....	582,099	610,530	624,332
Maine.....	316,527	330,986	338,005
Maryland.....	384,286	404,705	414,617
Massachusetts.....	357,686	375,286	383,830
Michigan.....	741,422	786,265	808,033
Minnesota.....	658,466	701,160	721,885
Mississippi.....	799,674	841,323	861,541
Missouri.....	726,339	768,743	789,327
Montana.....	299,017	314,325	321,756
Nebraska.....	444,288	470,235	482,831
Nevada.....	214,726	224,003	228,506
New Hampshire.....	254,590	265,817	271,267
New Jersey.....	350,201	366,912	375,024
New Mexico.....	297,896	311,308	317,819
New York.....	759,694	803,705	825,070
North Carolina.....	1,085,247	1,150,409	1,182,041
North Dakota.....	357,406	377,145	386,727
Ohio.....	879,621	932,252	957,800
Oklahoma.....	562,171	588,353	601,063

(continued on next page)

State	Fiscal Year 1962	Fiscal Year 1963 (estimated)	Fiscal Year 1964 (estimated)
Oregon.....	391,060	410,814	420,403
Pennsylvania.....	963,152	1,015,770	1,041,313
Puerto Rico.....	746,516	796,702	821,064
Rhode Island.....	223,958	233,313	237,854
South Carolina.....	645,603	680,459	697,379
South Dakota.....	354,926	374,748	384,370
Tennessee.....	824,272	870,911	893,552
Texas.....	1,093,376	1,150,747	1,178,597
Utah.....	267,727	279,602	285,367
Vermont.....	266,023	278,262	284,203
Virginia.....	728,497	768,577	788,033
Washington.....	437,354	460,382	471,561
West Virginia.....	551,395	575,146	586,676
Wisconsin.....	671,105	714,699	735,458
Wyoming.....	241,329	252,407	257,785
Subtotal.....	27,324,767	28,808,908	29,528,908
Regional Research Fund <u>a/</u>	6,899,081	7,414,313	7,664,313
Total, Agricultural research under the Hatch Act.....	34,223,848	36,223,221	37,193,221
b. For marketing research under the Agricultural Marketing Act <u>b/</u>	500,000	500,000	500,000
Total, Payments to agricultural experiment stations.	34,723,848	36,723,221	37,693,221
2. <u>Grants for forestry research</u>	--	--	<u>c/</u> 1,000,000
3. <u>Federal Administration</u>	1,176,911	1,292,779	1,379,779
4. <u>Penalty Mail</u>	250,000	250,000	310,000
Unobligated balance.....	56,241	--	--
Grand Total...	36,207,000	38,266,000	40,383,000

a/ Allotted to States by projects on the basis of recommendations by a committee of experiment station directors and approved by the Cooperative State Experiment Station Service.

b/ Allotted to States by projects on the basis of recommendations by the Experiment Stations Marketing Research Advisory Committee.

c/ To be apportioned among the States on a basis to be determined by the Secretary after consultation with a national advisory board of not less than seven officials of forestry schools chosen by eligible institutions.

Table 3

Estimated Distribution of Federal-Grant Payments to States by
Fields of Research at State Agricultural Experiment Stations,
Fiscal Year 1963
(In thousands of dollars)

<u>Field of Research</u>	<u>1963</u>
I. Improving Market Efficiency and Expanding Utilization:	
A. Marketing costs, margins, and efficiency.....	\$ 2,493
B. Evaluation, maintenance and improvement of product quality.....	2,389
C. Merchandising, market outlets and factors affecting prices.....	2,042
D. Expanding utilization of agricultural products.....	<u>1,146</u>
Subtotal.....	8,070*
II. Reducing Farm Costs and Increasing Returns:	
A. Farm management and planning.....	1,081
B. Development of new and improved farm machinery, equipment and structures.....	1,187
C. Reducing animal and poultry losses from diseases, parasites, and nutritional disorders.....	1,886
D. Animal and poultry genetics, nutrition and environmental and reproductive physiology.....	6,737
E. Reducing plant disease, insect and weed losses.....	4,874
F. Plant genetics, physiology, cytology, and biochemical behavior.....	4,535
G. Agricultural chemicals: residues, mode of action, metabolic fate.....	<u>890</u>
Subtotal.....	21,190
III. Improving Use of Natural Resources:	
A. Soil conservation and management.....	3,299
B. Hydrology, water conservation and management.....	705
C. Forestry.....	555
D. Range.....	200
E. Wildlife.....	35
F. Economics of conservation and use of natural resources.....	<u>205</u>
Subtotal.....	4,999
IV. Agricultural Adjustment and Rural Development.....	1,183
V. Human Nutrition.....	1,281
Total, Fields of research.....	<u>36,723</u>
Federal Administration.....	1,293
Penalty Mail.....	<u>250</u>
Total appropriation.....	<u>38,266</u>

*Includes \$500,000 Sec. 204(b) funds

Payments to States and Puerto Rico under the Hatch Act

Selected Examples of Recent Progress:

I. Improving Market Efficiency and Expanding Utilization of Agricultural Products.

- A. Plant Products of Economic Potential in Hawaii.--In an effort to find new uses for tropical plants researchers at the Hawaii Agricultural Experiment Station have extracted the natural colorant from the plant Bixa orellana. This dye has found use as a coloring for butter, cheese, margarine, and oils and in the manufacture of soaps, woodstains, shoe polish, and floor wax. This finding is significant in view of questions that have been raised concerning the safe use of synthetic coloring agents based on coal tar dyes.

Although several varieties of the Bixa orellana are cultivated, the most desirable one from the standpoint of dye production is the pointed pod variety. Scientists estimate that this variety will produce up to 1000 pounds of 10 percent dye per acre every year. Further testing and refining the cultural practices should increase the yields.

- B. New Uses for Waste Products.--Georgia Agricultural Experiment Station researchers have discovered new ways to increase the efficiency of food processing industries through reduction of waste disposal and recovery and profitable utilization of products formerly handled as wastes. Extractants from these wastes, principally anthocyanins and leucoanthocyanins, have shown both antibiotic and growth stimulating effects on certain microorganisms. Ten different anthocyanin compounds have been isolated from grapes. The ultimate outcome of this research could be development of new natural antibiotic and growth-promoting products important to both human and animal health.

- C. Fish Thrive on New Feed.--"Oregon pellets" an inexpensive food that produces more pounds of fish with less waste, lower shipping costs, and substantially less labor than conventional hatchery diets have been developed by scientists at the Oregon Agricultural Experiment Station. The pellets are made from sterilized fishery waste products and are now being produced by machine commercially. The pellets have been tested by the Oregon Fish Commission under hatchery conditions with results in growth and efficiency of food conversion comparable to those obtained by the researchers under laboratory conditions. Evidence indicates that the pellets will reduce incidence of disease known to be propagated by existing hatchery diets. The new fish food has important possibilities in better utilization of marine resources and increased food supply for populations already heavily dependent on fishery products.

- D. Enzyme Destroys Flavor.--Research at the Oregon Agricultural Experiment Station reveals that the loss of flavor in fermented dairy products, such as cottage cheese and buttermilk, is due to the presence of an enzyme, diacetyl reductase, in different lactic acid producing bacteria. The enzyme converts the flavor and aroma compound, diacetyl, to another compound which does not possess the desired flavor and aroma. Results of this research will provide a convenient means for selecting starter cultures for manufacturing fermented dairy products with good flavor and aroma.

- E. Ultrasonics to Measure Leanness.--The principle of ultrasonics (Radar and Sonar are examples) was recently applied to measurement of fat and lean. Industry, working with various State Agricultural Experiment Stations, was able to adapt ultrasonic devices with appropriate transducers, oscilloscopes and recording instruments for use on live animals. Colorado workers found a high correlation between fat thickness, as measured with ultrasonics, and fat thickness in the beef carcass. Iowa workers showed that percent of lean cuts could be accurately predicted from ultrasonic backfat. Scanning devices, again developed cooperatively, were added and the Colorado, Missouri, and Michigan workers were able to make repeated measurements of fat and lean across muscles. A device combined with time exposure photography made it possible at the New York Cornell station to "photograph" the cross section of muscle and fat in the live animal and permit accurate measure of area of fat and muscle. These several developments and their testing and application have made it possible to accurately assess the carcass composition of live animals in terms of fat and lean.
- F. Milk Lipase Isolated in Pure Form.--Lipases are biologically an important group of enzymes since they are associated with fat metabolism. The role of lipase in the development of rancidity in fresh milk and other dairy products is poorly understood. Scientists of the Nebraska Agricultural Experiment Station have achieved an important step by successfully isolating milk lipase in a pure form. The purified lipase has approximately 2600 times the activity of that in milk. This achievement paves the way for studies on the properties of lipase and should make it possible to determine why the milk of some cows is more susceptible to rancidity and how it is influenced by season of year and other environmental factors.
- Research at the Washington and Connecticut (Storrs) stations may provide a means of differentiating between the various lipases or esterases in milk. These basic studies on techniques for measuring changes in the enzyme content of milk are necessary before scientists can pinpoint the causes for some milk quickly becoming rancid while other batches handled in the same manner retain a desirable flavor for a much longer time.
- G. Differentiation of Staphylococcal Strains by Infrared Spectrophotometry.--Investigations by bacteriologists at the Utah Agricultural Experiment Station found that it was possible to use infrared spectrophotometry in separating strains of Staphylococcus. Patterns of strains studied showed good reproducibility. Samples prepared after 9 months gave spectra similar to those prepared earlier. No significant variations in spectral patterns were observed where the organisms were killed by physical means, chemical agents or antibiotics. Aging of Staphylococcus aureus cultures did not modify the infrared spectrum. Tracing the origin of disease outbreaks in humans and animals may be facilitated by this method.
- H. Radiation Protection with Bacteria.--Oregon Agricultural Experiment Station microbiologists have discovered a new bacteria which appears to protect white mice from effects of lethal doses of radiation. This could be one of the first steps for developing a substance which would protect man against radiation damage. Certain white mice inoculated with a preparation of Micrococcus radiodurans--the scientific name chosen for the new organism, a bacteria--are surviving doses of 800 roentgens of radiation. Discovery of the new organism was an offshoot of other research.

Certain pieces of meat, even though exposed to radiation rates thought to be fatal to almost all living organisms, continued to deteriorate. This told the scientists that probably some living thing in those particular pieces of meat could withstand tremendous doses of radiation. This organism often may be found in meat. It is not disease-producing, however, and is killed easily with heat, but not by radiation. Some of the bacteria survive an exposure of up to 6,000,000 roentgens.

It manufactures the ordinary pinkish pigment which gives corn and carrots their sunny color. Scientists have suspected for years that these same pigments play some part in protecting animals against radiation from sunlight.

II. Reducing Farm Costs and Increasing Returns.

- A. Lymphomatosis in Chickens.--Avian lymphomatosis is the most devastating disease of chickens. Three obstacles which have impeded research on lymphomatosis are (1) the inability of workers to reproduce the disease at a significant rate in a short period of time, (2) confusion about the inter-relationships of the neural, visceral, and ocular forms, and (3) the lack of a test for lymphomatosis. These obstacles have been overcome to a large extent during the past few months by workers at the Massachusetts Agricultural Experiment Station. The neural, visceral, and ocular forms can now be reproduced at a highly significant rate (neural, visceral 90-100%, ocular 75%) within 2 to 4 weeks postinoculation. Considerable field and laboratory data have been collected indicating that these three forms of lymphomatosis are caused by a single agent. This agent has been titrated in young susceptible chicks. A serum neutralization test can now be based on this titration. Furthermore, the agent is currently being grown in embryonating chicken eggs where it causes lesions and death. This promises a more simple and rapid test.

These developments have laid the foundations for future research on avian lymphomatosis and present an opportunity to the people in agriculture to not only enhance recognition of its own industry but to contribute significantly to the prevention and control of cancer in humans.

- B. Metabolism of Rumen Microorganisms.--The nutrients contained in cattle and sheep feeds undergo great modification and breakdown in the rumens of these animals. This function is the primary factor enabling ruminants to utilize the coarse feeds which they normally consume. A major difficulty in understanding the roles of the various organisms present has been the inability to maintain normal cultures of these organisms in the laboratory for extended periods of time.

Scientists at the Illinois Agricultural Experiment Station have achieved the continuous cultivation of normal rumen organisms utilizing equipment and procedures which allow complete control and measurement of the added nutrients and the products resulting from the fermentation.

This is a significant breakthrough which will enable a more accurate assessment of the functions of the rumen organisms than has been possible with previously used methods. This will include identification of the important organisms which in turn will allow detailed study of their metabolic needs for specific functions. Knowledge of the metabolism of the rumen microorganisms will enable modifications to be made to improve the efficiency and/or modify the products produced by ruminants.

- C. Sterility - An Allergic Reaction.--Antiserum to bull sperm has been produced by Wisconsin workers using techniques of immunology. Antibodies are built up in animals when sperm from a bull is injected into the bloodstream. Antiserum

from such animals destroys the effectiveness of sperm from this bull if the antiserum is used as a diluent of an ejaculate containing sperm. High concentrations of antibodies introduced into an ejaculate result in infertility (probably failure of sperm to fertilize); while low concentrations result in embryonic death. It is quite likely that a similar mechanism is functioning in utero as an agent impairing normal reproductive processes. This may explain why use of a different sire may result in pregnancy and normal gestation when the female was previously bred several times without success.

- D. Germ-free Pigs of Value in Swine Disease Research.--In past studies of animal diseases it has been impossible to determine the exact effects of specific disease agents because of the myriads of germs associated with all animal life and which often contribute to secondary effects under disease conditions. The Michigan Agricultural Experiment Station has developed procedures for surgical delivery of baby pigs free of germs. After delivery the pigs are reared in sterile, plastic enclosures and supplied filtered air from which all micro-organisms are removed. Special diets have been formulated and are completely sterilized before being introduced into the germ-free environment of the pigs. Germ-free pigs are being used to determine the effects of specific disease agents in the absence of other organisms. This work has already shown that the body changes occurring in hog cholera are due to the causative virus and not to secondary bacteria, thus settling a question that has existed as long as this disease has been known. The germ-free technique offers promise for the study of many other diseases which are of economic importance to swine producers.
- E. Greater Baking Strength in New Hard Red Spring Wheat Variety.--Justin, a new rust resistant wheat variety just released by the North Dakota Agricultural Experiment Station, is possibly the strongest wheat ever released by the station. Baking strength is the major quality characteristic possessed by hard red spring wheats. Results of quality tests conducted by the station over the past 4 years indicate that Justin is consistently and considerably better than Selkirk, the variety currently grown most widely. Although flour yield was lower, wheat and flour protein, absorption, dough handling characteristics, loaf value, crumb color and dough elasticity were superior to other varieties tested.
- F. New Drought Resistant Range Grass from Plant Introduction.--Superior clones from an introduction of Ehrharta calycina (T.O. 1883) have been selected at the California Agricultural Experiment Station as the basis for a new variety for release to ranchers.

The persistence of this superior selection on dry, sandy soils has been shown, through detailed autecological studies over the past 3 years, to be due to its unusually extensive, though delicate, root system that is efficient in moisture uptake and allows expression of temperature-regulated autumn growth before the onset of fall rains.

The species, originally introduced from South Africa, has shown some promise for nonirrigated range lands in California in the past. The nonseed shattering characteristics of the superior selection will permit commercial use of the unusual drought resistant characteristics of the species.

A number of other introductions from the nurseries at Davis, Riverside, and the Hopland West Side and South Coast field stations were found worthy of further study. Seventeen species of shrubs from Africa, potentially useful for browse for domestic animals and big game, were included among the 134 accessions tested for the first time since 1961.

- G. Chemical Attractant Offers Termite Control.--Homeowners may soon be able to keep termites away with a bait that lures them to an insecticide before they can do too much damage.

A team of entomologists at the Wisconsin Agricultural Experiment Station have been getting good results in experiments with an attractant material extracted from decaying wood. The possibility of the poison bait came into light when the entomologists noted that termites were attracted to a fungus in decaying wood. When dieldrin was added to the fungus-invaded wood, termites continued to be drawn to the wood even though they were killed by the insecticide.

- H. Cell-Free Nitrogen Fixation.--Researchers at the Wisconsin Agricultural Experiment Station and the DuPont Chemical Company, working independently, have obtained successful and dependable nitrogen fixation with cell-free extracts of microorganisms. Their success should pave the way for faster progress in understanding how certain types of bacteria can transform nitrogen from the air into nitrogen compounds that plants can use--a trick which man can now duplicate only with expensive chemical factories. The procedure involves the separation from bacterial cells, of the enzyme system responsible for carrying on the nitrogen fixation process. In past work the presence of bacterial cell made it difficult, if possible at all, to identify intermediate products of fixation process. Processes of fixation can be studied more directly with the cell-free preparations.
- I. Boron Deficiency in Cotton.--Research at the Mississippi Agricultural Experiment Station has shown that boron deficiency is responsible for conditions of severe shedding of squares and bolls, stunting of plants, and death of terminal buds cotton. The problem was particularly serious on acid soils that had been recalcitrant. Normal plant growth and yield increases ranging up to 1000 pounds of cotton per acre resulted from boron additions. Boron may be applied (1) with the NPK fertilizer for cotton, (2) as a foliar spray at weekly intervals during the fruiting period probably with the insecticide solution, or (3) by direct application to the soil as a solution spray at or prior to planting, possibly with the premerger herbicide.
- J. Quality of Soil Microorganisms.--Cooperative Research by the Nebraska Agricultural Experiment Station and the Agricultural Research Service has shown that the activities of nonpathogenic soil microorganisms may be either favorable or unfavorable from the soil and crop standpoint. The organism Penicillium urticae Bainer, isolated from stubble mulched plots showing reduced wheat growth produced a phytotoxic substance, identified as patulin (a hormone-like substance which reduced seedling growth of roots and shoots in corn and wheat. A substance toxic to root and shoot growth has been isolated from soil containing this organism. In other work certain organisms were found to be superior in stabilizing soil aggregates against destruction by water. In order to utilize these superior microorganisms it is necessary to sterilize the soil with broad spectrum fumigants and then introduce the superior microorganisms. An approach such as this envisages the use of superior microorganisms to accomplish control not only of microbial influence on soil structure, but also of many microbial activities of the soil.
- K. Biological Control of Olive Scale by an Introduced Parasite.--A wasp parasite introduced from Iran and Iraq by the California Agricultural Experiment Station has been found to be effective in the control of Olive Scale. Observations show that where insecticidal applications can be reduced or eliminated, summer irrigation properly applied and with proper olive tree pruning, highly satisfactory biological control by the parasite can be realized. In addition, a high degree of control of olive scale in and around residential properties, city streets and parks, on a great variety of host plants, is attributed to the action of the parasite.
- L. Disease Resistant Burley Tobacco.--Ky 12, a new variety of burley tobacco released in 1962 by the Kentucky Agricultural Experiment Station, has high resistance to two destructive diseases of tobacco, wildfire and fusarium

wilt. Resistance to wildfire was transferred to this variety from a relative of tobacco, Nicotiana longiflora. Resistance to fusarium wilt was transferred from a resistant flue-cured tobacco to Ky 12. Resistance to wildfire and fusarium wilt has been combined with resistance to tobacco mosaic virus and black root rot in this variety.

I. Conservation and Use of Natural Resources.

- A. Control of Water Loss from Plants.--Scientists at the Connecticut Experiment Station in New Haven have discovered a new approach to the conservation of water through the biochemical control of leaf stomata--the small valve like pores in the leaf. The opening and closing of the stomata are normally controlled by enzymes which are activated by the light and water supply of the leaf.

However, when scientists sprayed a-hydroxysulfonates on the leaves the stomata closed even in bright sunlight. By doing this the water loss by transpiration was markedly reduced without appreciably diminishing the photosynthetic assimilation of carbon dioxide. It seemed that the chemicals had an inhibitory affect on the enzymes which control the opening and closing of the stomata.

The results of this research hold promise in developing a practical method of diminishing waterlosses from crops during time of drought.

- B. Keeping Pine Seeds Alive Longer.--A serious bottleneck in the South's mammoth traffic in pine seeds for nursery stock and direct seeding uses has been broken. At the Louisiana Agricultural Experiment Station a group of scientists have developed a coating procedure which greatly extends the life of a pine seed in storage. Since good seed years for the southern pines occur irregularly, storage for several years is often necessary.
- C. Speeding up Southern Pine Breeding.--The Georgia Agricultural Experiment Station has found 3- and 4-year-old loblolly pines already bearing seed cones. If tests now being made with these plants are favorable, it will mean a giant step forward in speeding up development of genetically superior planting stock, for tree breeders have usually had to wait 8 to 10 years or longer for the first year of seed production in loblolly pine.
- D. Water Use and Yield from Range.--The California Agricultural Experiment Station is cooperating with Federal and State agencies in research on hydrologic relationships of mountain watersheds and the effects of vegetative and certain land use practices on use and yield of water. Precipitation is being supplemented in certain areas to permit accurate evaluation of groundwater recharge and movement, water use from groundwater table by deep rooted vegetation, winter evapotranspiration, interception losses and other related factors. Groundwater movement is being followed by water table measurements and by use of radioactive tracer techniques employing injected tritiated water. Transpiration of water from groundwater table has been measured from depths of at least 40 feet by tritium tracing and analysis of plant tissue in trees downstream from injection wells. Additional evapotranspirational data for native grasses are obtained from floating lysimeters located on the watersheds. Conversion of native brush vegetation to improved watershed cover types results in substantially increased water yields in both surface and groundwater flow. Results from the work contribute to better understanding of components of the hydrologic equation and thus permit improved efficiency of water management.

IV. Agricultural Adjustment and Rural Development.

- A. The Communication Process and the Adoption of Farm and Home Practices.--Rural Sociologists at the Ohio Agricultural Experiment Station predicted 64 percent of the variation in "innovativeness," whether a farmer is relatively early or late to adopt new agricultural ideas. Previous attempts had only explained about 50 percent of the progressiveness of farmers. The best single factor in predicting innovativeness were community norms, whether progressive or traditional.

The findings indicate that even though two farmers are the same on such characteristics as farm income, size, and communications sources, if one farmer lives in a progressive community, he will be much more innovative in adopting new ideas than the other farmer who lives in a community with traditional norms. In fact, community norms explained 20 of the total 64 percent of the variation explained in the innovativeness variable.

These research results confirm the notion that a farmer's neighbors are one of the strongest influences on his farming decisions. The implication for change agents such as Extension workers and teachers is that they should place greater emphasis upon changing the norms of a community and be less concerned with securing the adoption of single innovations. Changing the norms is likely to occur by first locating and influencing community leaders.

- B. Farm Mechanization leads to Stabilization of Labor Force and Eliminates Dependence on Migrant-Seasonal Labor.--A survey by the California Agricultural Experiment Station (Davis) shows that mechanization of the cotton harvest in Kern County has reduced the number of seasonal workers needed from 30,000 to 5,000. Migration of workers into the county to pick cotton has virtually ceased. When mechanization of potato picking and cotton chopping is complete, a local labor force of around 5,000 to 6,000 workers can do all the farm work in the county.

The long-range effect of mechanization will be a more skilled and productive farm work force with increased earnings and higher levels of living. Mechanization of the cotton harvest has had the added effect of shortening the annual farm work season in the county by about 3 months.

Displacement of the local seasonal workers from seasonal stoop-labor farm employment will call for farm and nonfarm job training and an increase in nonfarm employment opportunities. Since the farm workers under the complete mechanized situation will be more skilled, earning higher salaries, there will be less need for children and women to seek productive employment. The retraining job, thus, is less formidable since two-thirds of the displaced workers were women and children.

- C. Tourism and Outdoor Recreation can be Important Sources of Income to Rural People.--A study undertaken by the Missouri Agricultural Experiment Station in 1960 and completed in 1962 showed that tourists contributed about 21 percent of the total business done by retail and service firms in the Ozark area in 1959. This business amounted to \$68 million in 31 counties. Most of the firms affected were small, and 75 percent had been organized by local people. Nearly three-fourths of the operators were born on a farm, and 97 percent of the additional jobs in firms catering to tourists were filled by local people. Tourists purchased approximately \$2,500,000 worth of locally produced goods. At the current rate of development the tourist trade will double by 1970 and will provide employment for 85 percent more people than are now employed in these services. Results of the study have been published in two bulletins.

V. Human Nutrition.

- A. Protein from Green Algae.--A new technique has been developed by scientists at the Virginia Agricultural Experiment Station for growing algae as a major protein source. The technique consists of synchronizing the growth cycles of billions of single cells in a culture using cyclic shifts in the environmental conditions. Once these cells are synchronized, they develop through all phases of their growth cycle at the same rate and divide at the same time.

It was found that when cells have completed almost one-half of their life cycle, the protein contains approximately 15 percent more methionine than at any other time during cellular growth. If algae should prove to be a source of protein, the protein could be enriched considerably by inducing partial synchrony into the mass cultures and harvesting at the correct time.

Regional Research Fund

For the conduct of research in which two or more State agricultural experiment stations are cooperating to solve problems that concern the agriculture of more than one State, there is available the "Regional Research Fund" authorized by Section 3(c) (3) of the Hatch Act, as amended, (formerly Section 9(b) (3) of the Bankhead-Jones Act). This fund totaled \$6,899,313 in 1962. Allotments are made to stations on the basis of projects recommended by the Committee of Nine established by the Act to represent the State stations.

The following are examples of work carried on in 1962 under this fund:

1. Pesticide Residue Research Aids Everyone.--To meet the complex problem of pesticide residues on or in agricultural commodities scientists at 40 State Agricultural Experiment Stations and the U. S. Department of Agriculture joined together through four regional research projects and are making significant progress in this critical area. During 1961, one regional group made studies on 48 chemicals applied to 31 crops and residues in meat, milk, eggs and poultry. This required about 3500 analyses. Another group, in addition to acquiring new residue data, has made a significant contribution in improving techniques and methodologies. The other two regional groups have uncovered a wealth of information concerning the toxicity and metabolism of pesticides in mammals, poultry, and insects and the degradation and movement of pesticides in the soil.

The data is primarily useful as a basis for making recommendations for the use of pesticides and other chemicals. The minimum period permissible from the last application of chemical until harvest and the amount remaining on the crops or products at harvest are of major importance. One group has prepared pesticide residue disappearance curves to chart this information.

Besides being useful to growers, the Department of Agriculture uses the findings of these four groups in registering pesticide chemicals for use and approving labels and Food and Drug Administration, Department of Health, Education and Welfare, for establishing tolerances. The ultimate purpose is safeguarding consumers.

2. Scientists Combine Efforts to Accelerate Progress through Research on Plant Parasitic Nematodes.--The extensive damage to plants by nematodes has gained widespread recognition. The varied and complex conditions under which nematode damage occurs makes these problems inherently susceptible to collective research effort.

Agricultural experiment station scientists working cooperatively in the Southern region were able to prepare a region-wide summary of parasitic nematodes and their hosts. Control measures were evaluated on a regional basis, thus furnishing necessary replication to account for differences in soil, climate, or crop types, and at once preventing duplication of effort. Granular carriers for nematocides were developed and are now used world-wide to efficiently protect certain crops.

In 1956 the State stations in the Northeast organized a regional project in nematology and have determined many of the forms present in the region. Basic biological knowledge on critical respiration rates and enzymatic systems of some forms has been developed. Test-tube culture of nematodes, now a widely used research technique, came from work by this group. Development of resistant plants led to successes such as the Bethel soybean and to new knowledge of the mechanism of resistance itself.

The North Central State Agricultural Experiment Stations pooled their efforts in nematology in 1957. They have developed a very inclusive research collection of nematodes which is now used by many workers in this country. Among the significant findings of this group have been the discovery of a lethal virus of nematodes and the mode of food ingestion in some types.

Since 1958, nematologists in the Western region have been developing a research program on the role of nematodes in diseases of plants. They have made significant findings on the role of nematodes in transmitting virus diseases. Alfalfa resistant to the stem-nematode is now in use and there is promise of resistance to the root-knot nematode.

3. Regional Marketing Studies Aid Consumers.--Promising solutions to problems of marketing efficiency and maintenance of product quality are evolving from nearly 50 regional cooperative projects by the State Agricultural Experiment Stations.

The North Central State stations have just completed a series of studies directly benefiting poultry producers and dependent industries. Proper washing of soiled eggs with an approved sanitizer reduced losses in market channels, improved prices to the producer, and increased better quality for the consumer. Proper use of coolers and spray oiling resulted in as much as 10 percent improvement of quality. Special techniques are now available for the enzymatic or yeast fermentation of egg white previous to drying which makes possible the production of an odorless, flavorless dried albumen having all of the properties of fresh albumen. Bakers and candy manufacturers will benefit from the quality improvement. Shelf life and frozen storage of quality poultry meat were extended by special slaughtering techniques, including immobilization with carbon dioxide, antibiotics and polysaccharide coatings. A considerable savings to consumers and processors was made through the development of an improved bacteriological technique for evaluating sanitary conditions in a processing plant.

Seven Northeastern State stations cooperating in regional research with the Economic Research Service, USDA, made remarkable progress providing fruit and vegetable processors with market structure and marketing methods information. Results indicate some of the basic problems and suggest new arrangements in marketing strategy to cope with changing conditions. Changes already have been accomplished, as a result, in the apple industry of New York State to consolidate sales of apple sauce, revise promotional efforts under the State Marketing Order, and to launch a five-point improvement program for the industry.

A regional research project initiated in 1959 by 12 State stations with Economic Research Service in the South to investigate the movement of livestock and meats, has already yielded practical results. Florida, for example, negotiated an agreement whereby monthly reports supply a continuing series of slaughter data for use in decision making by the Florida and Southeast livestock and meat industry. Estimates of the effects of increasing "pig parlor" hog production along the Mississippi River on pork prices will help agricultural workers to advise pork producers and marketing agencies.

Interregionally, seven State stations are concentrating their top marketing research talent on study of impacts of present and proposed agricultural price and income programs. Contributions have proved most useful in the process of design of the current experiment with the Food Stamp Plan, in the deliberations of the Joint Economic Committee of Congress, and for decisions relative to export programs. One of the project leaders served for two months during 1961 as advisor to the Food for Peace administrator. Based on his experience in the regional research, a number of administrative and confidential reports were prepared for the use of the administration.

Marketing Research under Sec. 204(b) of the Agricultural Marketing Act of 1946.

The following is an example of work carried on under this activity:

1. Farm to Market Hog Shrinkage.--An Indiana Agricultural Experiment Station study involving nearly 10,000 barrows and gilts found that several variables subject to farmer control are significantly related to in-transit shrinkage. While the study pointed out that shrinkage was a normal process and apparently caused by excitement and confinement away from feed and water, it showed that minimizing time in-transit was more effective in reducing shrink than any other measure. Time was more closely associated with shrinkage than was distance because it included variations in speeds and also included all time between loading and unloading. The study also showed shrinkage to be at a minimum between 20° and 60°F and thus emphasized the importance of efforts to minimize extreme temperatures by artificial means. Overloading and underloading were accounted as another significant factor, and shrinkage was shown to be at a minimum when hogs were loaded at 95 to 105 percent of recommended capacity. Holding hogs off feed prior to shipment was not as effective in reducing in-transit shrinkage as it was in helping hogs recover more quickly at markets where they had access to feed between arrival and sale.

Penalty Mail

The Hatch Act of 1887, as amended (7 U.S.C. 361f), provides for the mailing under penalty indicia by agricultural experiment stations of bulletins, reports, periodicals, reprints of articles, and other publications, including lists of publications

necessary for the dissemination of results of research. Mailings include not only those to individual farmers upon request but also to newspapers, libraries, other experiment stations, and organizations interested in results of research and dissemination of such results.

Under the terms of Public Law 705, approved July 14, 1956, the Department paid to the Post Office Department \$250,000 to cover postage on third and fourth class mail sent under the penalty privilege by the State agricultural experiment stations during fiscal year 1962. This payment covered the procurement of 2,948,251 envelopes, wrappers, labels, and tags by the experiment stations in the 50 States and Puerto Rico. Approximately the same volume of mail is anticipated in fiscal years 1963 and 1964.

EXTENSION SERVICE

Purpose Statement

Cooperative agricultural extension work was established by the Smith-Lever Act of May 8, 1914, as amended. The legislation authorizes the Department of Agriculture to give, through the Land-Grant Colleges, instruction and practical demonstrations in agriculture and home economics and related subjects and to encourage the application of such information by means of demonstrations, publications, and otherwise to persons not attending or resident in the colleges. Extension educational work is also authorized under the Agricultural Marketing Act of 1946 (7 U.S.C. 1621-1627).

The basic job of the Cooperative Extension Service is to help people identify and solve their farm, home, and community problems through use of research findings of the Department of Agriculture and the State Land-Grant Colleges, and programs administered by the Department of Agriculture.

State and county extension work is financed from Federal, State, county and local sources. These funds are used within the States for the employment of county agents, home demonstration agents, 4-H Club agents, State specialists and others who conduct the joint educational programs adapted to local problems and conditions. There were approximately 14,800 extension agents employed in the State and county extension offices on November 30, 1962.

The Federal Extension Service, as a partner in the cooperative effort, has two major functions:

1. Administration of Federal laws authorizing extension work, serving as liaison between the Department of Agriculture and the States and coordinating the work among the States;
2. Leadership in and coordination of the educational phases of all programs under the jurisdiction of the Department.

On November 30, 1962, there were 253 Federal Extension Service employees, of whom 244 were headquartered in Washington.

	Estimated Available, 1963	Budget Estimates, 1964
Appropriated funds:		
Payments to States and Puerto Rico	\$63,590,000	\$64,590,000
Retirement and employees' compensation fund costs for extension agents	6,765,000	7,110,000
Penalty mail	2,801,000	3,113,000
Federal Extension Service	2,597,500	2,515,000
Total, appropriated funds	<u>75,753,500</u>	<u>77,328,000</u>

Cooperative Extension Work, Payments and Expenses

	Payments to States and Puerto Rico	Retirement and Employees' Compensation Costs for Extension Agents	Penalty Mail	Federal Extension Service	Total
Appropriation Act, 1963	\$63,590,000	\$6,765,000	\$2,490,000	\$2,499,500	\$75,344,500
Proposed transfers, 1963, for:					
Increased postal costs	-316,000	- -	+311,000	+5,000	- -
Increased pay costs	-93,000	- -	- -	+93,000	- -
Base for 1964	63,181,000	6,765,000	2,801,000	2,597,500	75,344,500
Adjustment to in- clude in base the foregoing transfers in 1963 for pay and postal costs a/ ...	+409,000	- -	- -	- -	+409,000
Adjusted base for 1964	63,590,000	6,765,000	2,801,000	2,597,500	75,753,500
Budget Estimate, 1964	64,590,000	7,110,000	3,113,000	2,515,000	77,328,000
Change	+1,000,000	+345,000	+312,000	-82,500	+1,574,500

a/ The 1964 base has been adjusted to reflect the total appropriation for Payments to States and Puerto Rico in 1963, including \$409,000 which could not be used in 1963 for payments to States, and is being proposed for transfer to other subappropriation items in that year for pay and postal costs. This consists of \$249,000 for payment to Puerto Rico which could not be matched and \$160,000 for Federal Extension Service which was not used for Federal administrative purposes. This adjustment is necessary in order to assure that the amount each State receives under the formula prescribed in the basic law will not be reduced below the amount paid in 1963.

SUMMARY OF INCREASES AND DECREASES, 1964

Payments to States and Puerto Rico:

For payments under the Smith-Lever Act to strengthen the Rural Areas Development effort and provide increased educational activities under the Food and Agriculture Act of 1962	+960,000
For program support under Section 3(c) 1 of the Smith-Lever Act with special emphasis on poultry marketing and dairy utilization	+40,000
Subtotal	+1,000,000

Retirement and Employees' Compensation costs for extension agents:

To provide for Employees' Compensation Fund costs and for employer's share of Federal contributions to the retirement fund for cooperative extension agents	+345,000
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Penalty Mail:

For postal costs pursuant to Public Law 87-793	+312,000
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Federal Extension Service:

For postal costs pursuant to Public Law 87-793	+5,2
For pay act costs pursuant to Public Law 87-793	+81,8
Subtotal, increased pay and postal costs	+87,0
Reduction to reflect estimated savings due to the installation of a centralized data processing operation (MODE) for personnel and payroll data	-9,5
Reduction in subappropriation for Federal Extension Service due to the proposed use in 1964 of four percent funds, available but not used in 1963, under Section 3(c)1 of the Smith-Lever Act	-160,0
Subtotal	-82,5
Net increase	+1,574,5

PROJECT STATEMENT

Project	1962	1963 (estimated)	Increases		1964 (estimated)
			Increased Pay and Postal Costs: (P.L.87-793):	Other	
1. Payments to States and: <u>Puerto Rico:</u>					
a. Payments for cooper- ative agricultural extension work under the Smith-Lever Act a/	\$57,727,678:	\$61,860,000:	- -	+\$960,000(1):	\$62,820,00
b. Payments and con- tracts under the Agri- cultural Marketing Act	1,569,221:	1,570,000:	- -	- -	1,570,00
2. Retirement and <u>Employees' Compensation</u> <u>Fund costs for extension:</u> <u>agents</u>	6,194,745:	6,765,000:	- -	+345,000(2):	7,110,00
3. Penalty mail (for ex- tension agents and State extension directors) ..	2,490,000:	2,801,000:	+\$312,000	- -	3,113,00
4. Federal Extension <u>Service</u>	2,438,988:	2,597,500:	+87,000	+30,500(3):	2,715,00
Portion of "Payments to States" funds available for Federal Extension Service in 1963 under 4% provi- sion--not used for that purpose	- -	160,000:	- -	-160,000(3):	- -
Subtotal b/	70,420,632:	75,753,500:	+399,000(4):	+1,175,500	77,328,00

(Continued on next page)

Project	1962	1963 (estimated)	Increases		1964 (estimated)
			Increased :	Other	
			Pay and		
			Postal Costs:		
			(P.L. 87-793):		
Obligated balance	383,868:	- -	- -	- -	- -
Total increased costs					
P.L. 87-793):					
Pay costs	(- -)	(92,700):	(+89,270)	(+1,265)	(183,235)
Postal costs	(- -)	(316,300):	(+317,200)	(- -)	(633,500)
Total available or					
estimate	70,804,500: c/	75,753,500:	+399,000	+1,175,500	77,328,000
Proposed transfers for					
increased pay costs ..	- -	d/ -409,000:			
Total appropriation or					
estimate	70,804,500:	75,344,500:			

The amounts shown for 1963 and 1964 exclude the four percent of the increases provided under this subappropriation in 1963 and proposed for 1964, which, under the Act of October 5, 1962 is available for the Federal Extension Service and is included in that item below.

Represents obligations or availability. Applied costs for 1962 are \$70,374,220. The difference of \$46,412 reflects adjustments in prior year obligations.

Includes \$1,900 estimated to be transferred to "Salaries and expenses, General Administration," during fiscal year 1963 for the Office of the Inspector General. This amount transferred from 1963 balances under the subappropriation "Payments to States and Puerto Rico."

INCREASES AND DECREASES

The net increase of \$1,574,500 under the appropriation "Cooperative Extension Work, Payments and Expenses" for 1964 is composed of:

1) An increase of \$960,000 for payments to States and Puerto Rico to strengthen the Rural Areas Development effort and provide increased educational activities under the Food and Agriculture Act of 1962.

The Extension Service is requesting \$1,000,000 for the subappropriation, "Payments to States and Puerto Rico." Of this proposed increase, 96%, or \$960,000 would be available for payments to the States and Puerto Rico, and 4%, or \$40,000, would be available to the Federal Extension Service under the provisions of the amended Smith-Lever Act of October 5, 1962, Public Law 87-749.

Need for Increase: During the past 40 years there has been a major evolution in rural living. Transformation and consolidation of quiet, self-contained farming communities into complex agri-industrial trade areas has created major adjustment problems which affect every rural family. Rural people need to understand the necessity for adjustment to this dynamic economy. Adjustments in agriculture, population, and community institutions, and the needs for training and supplementary sources of income are paramount. Local people need educational and organizational assistance if they are to make these adjustments without hardships and major dislocations.

Many rural communities are suffering from severe economic stagnation with resulting low income. The potentialities of an area for economic growth vary widely. The causes of low income differ between areas and the method for accelerating economic growth is also different. Each area contains different kinds and qualities of natural and human resources; some of which may not have been fully discovered, completely assessed or adequately developed. In many rural areas there is an appalling waste in terms of low farm production per person and even in some of the best farming areas there is underemployment of resources and serious need for smoother resource adjustment. These are problems which are responsive to educational assistance. Helping people in the rural communities has been Extension's basic responsibility from its inception. The Cooperative Extension Service has reorientated its educational efforts in order to come to sharper grip with these problems.

Extension in carrying out its responsibilities has provided educational assistance to the farmer in the critical appraisal of his operations, analyzing his resources, and determining what changes are needed to give him greatest returns. However, many of the farmers' problems cannot be solved within the confines of his farm. To meet the problem, the Department of Agriculture is carrying on a coordinated program of intensive assistance known as the Rural Areas Development Program in which cooperative extension is playing a major roll.

Rural Areas Development is a method for bringing about the maximum total resource development in any particular area and for facilitating the necessary economic and social adjustments that are required for progress. Its application is not limited to economically depressed areas but serves as an appropriate means for carrying out adjustment and development activities in all areas. This is especially true in the educational efforts essential to encourage agricultural and nonfarm development activities designed to serve the whole community more adequately.

The 1955 amendment to the Smith-Lever Act authorized Extension to assist and counsel local groups "in appraising resources for capability of improvement in agriculture or introduction of industry designed to supplement farm income, cooperate with other agencies and groups in furnishing all possible information as to existing employment opportunities particularly to farm families having underemployed workers." This expanded responsibility is wholly consistent with the RAD concept of area development.

The key to success of the RAD program is active involvement of all groups that can make a contribution. It is an organized effort in which representatives of agriculture, business, finance, labor, schools, the church, the government technical agencies, and others come together to plan and initiate action for greater economic growth and social improvements to the development of their resources.

Extension's knowledge of local conditions, experience in organizing for group action, and competence in helping local people develop and implement programs for improving resource use make it uniquely capable in carrying out its role of providing educational and organizational leadership to the Rural Areas Development and the Area Redevelopment Administration's program.

However, additional funds are needed for a vigorous and aggressive Rural Areas Development Program, aimed at helping to solve social and economic problems in rural areas.

No agency of the USDA is as well equipped as the Cooperative Extension Service to help people understand the significance of new legislation to their operations and possible application to specific individual local situations.

The recent Food and Agriculture Act of 1962 is directed to improving and up-dating Federal programs in a broad area of action. To meet the needs of the Department to obtain public understanding of the provisions of the Act, the Cooperative Extension Service is required to provide educational programs designed for public understanding of the Act. In anticipation of its passage, members of the Federal Extension Service Staff furnished their State counterparts suggestions useful to wheat growers in helping them decide on any further reduction under provisions of the new law. More attention should be directed to conservation and development of natural resources. Our natural productive resources should be protected by increased emphasis on watershed protection, forest land development and conservation, fish and wildlife management and prevention of water pollution. More attention should be directed to the potential of recreation and tourism for supplementing the farm income. Extension could provide information needed for sound decisions for action in these areas. An increase in funds would enable this Service to make more significant contributions to the success of this Act which was designed to help sustain prosperity, reduce burdens of surpluses, and maintain stable food prices.

State Extension Services are adjusting their programs in many areas to meet the requests for assistance from farm, rural and urban people.

Farmers must use known applicable science and **technology** in making increasingly complex management and operating decisions if their efforts are to result in profitable operations. Educational assistance to these farmers must be more comprehensive and precise than at any time in our history.

Farmers also need educational assistance to help them adjust their marketing methods to better serve changing domestic and world markets, utilization of farm products, and market organization. With increased utilization research expanded emphasis is needed on educational work with processing and marketing firms to help them adjust to new developments and with farmers to obtain adjustments in production that this new utilization will call for.

Management principles should be a major part of extension programs in family economics, efficient use of family time, energy and money resources. Similar training should be provided our youth including assistance in career exploration. Families are requesting assistance to help make adjustments resulting from employment of women outside the home. Consumer educational programs should include (1) increased efforts to improve family nutrition, particularly for teenagers; (2) more emphasis on housing improvements, particularly for low-income families; and (3) better use of surplus foods.

Plan of Work: The proposed increase of \$960,000 would be used to provide payments to States and Puerto Rico under the Smith-Lever Act to expand Extension's leadership and organizational support to the Rural Areas Development Program and the carrying out of effective educational activities under the Food and Agriculture Act of 1962 and the other areas enumerated under the need for increase. Experience has shown that more work can be accomplished and better results achieved under the RAD program when State and Area agents can devote full time to this specific assignment.

The Extension Service has also found that problems in rural areas transcend county lines, and an area agent can provide more effective leadership and assistance than is possible on a one-county basis. He can be of material assistance in bringing together county workers of several counties when working on a problem common to all. The increase would materially assist States to strengthen these important areas.

(2) An increase of \$345,000 for retirement and employees' compensation costs for extension agents consisting of:

(a) An increase of \$329,510 for Federal contribution to the retirement fund for cooperative extension agents pursuant to Public Law 854.

Cooperative extension agents are joint employees of the United States Department of Agriculture and the cooperating Land-Grant Institutions. They hold appointments under Civil Service Commission Regulation A-6, III(a)(1). Such appointments place them under the provisions of the United States Civil Service Retirement Act, with employee contributions and benefits based on total salary received from the cooperating partners. The employer's contribution to the Federal retirement fund, to match contributions of these agents, is provided by Federal appropriation to the Federal Extension Service.

Based on anticipated salary adjustments during fiscal year 1963, reflected in estimates obtained from the States, the entire 1963 appropriation of \$6,765,000 will be required for the employer's matching retirement costs for fiscal year 1963.

It is estimated that 80 percent of the \$960,000 Federal increase in payments to the States funds requested for 1964, and 75 percent of the anticipated increase in State and county contributions of approximately \$5,500,000 to \$6,000,000 for 1964, will be used for salaries of personnel subject to the Retirement Act. Applying the 6.5 percent employer's retirement contribution to the combined increase results in the additional Federal contribution requirement of \$329,510. This increase, together with currently available funds for this purpose, will total \$7,094,510, the amount estimated to be necessary to cover the employer's matching requirement for 1964.

(b) An increase of \$15,490 for Employees' Compensation Fund costs for cooperative extension agents pursuant to Public Law 86-767.

Cooperative extension agents are entitled to compensation benefits under this Act. This increase of \$15,490 is required to reimburse the Bureau of Employment Compensation for the benefits paid to extension employees from the Employees' Compensation Fund for fiscal year 1962. An over-all explanation of payments to the Employees' Compensation Fund is included in the Preface to these Explanatory Notes in Volume 1.

(3) A net increase of \$30,500 for Federal Extension Service for direct program assistance to the States, for program leadership and for administration, consisting of:

(a) An increase of \$40,000 representing four percent of the \$1,000,000 increase requested for fiscal year 1964 under the subappropriation, "Payments to States and Puerto Rico."

At present the Federal Extension staff is unable to provide program assistance to the States in several vital subject-matter and administrative areas, while in other important areas a single staff member is attempting to cover several highly technical subject-matter fields. This precludes the Federal Extension Service providing the kind of assistance required by today's conditions. Recognizing the need for Federal assistance to the States in furthering the national, State and local programs, the Congress provided, through the medium of the amended Smith-Lever Act, that four percent of sums appropriated in addition to the 1962 amounts be allotted to the Federal Extension Service for administrative, technical, and other services, and for coordinating the extension work of the Department and the several States, Territories, and possessions. Four percent of the \$1,000,000 increase requested under the subappropriation, "Payments to States and Puerto Rico," for 1964 would be \$40,000 and would provide for special emphasis on educational support to the States in the areas of poultry marketing and dairy utilization.

(b) A reduction of \$9,500 to reflect estimated savings due to the installation of a centralized data processing operation (MODE) for payroll and personnel data. An explanation of this reduction is included in the Preface to these Explanatory Notes.

(c) A reduction of \$160,000 in the appropriation to the Federal Extension Service offset by use of \$160,000 in 1964 representing 4% of the total increase provided under "Payments to States" in 1963.

The Department of Agriculture and Related Agencies Appropriations Act, 1963, included an increase of \$4,000,000 for Payments to States and Puerto Rico of which four percent (\$160,000) was available to the Federal Extension Service under the provisions of the amended Smith-Lever Act. However, the conferees directed that none of the \$160,000 be used in 1963 and is therefore reflected as unused by the Federal Extension Service in that year. For 1964, it is proposed to use these funds to provide direct program assistance to the State Extension Services in planning and developing State and county programs. This amount would be offset by a corresponding decrease of \$160,000 in the direct appropriation under the subappropriation item, "Federal Extension Service," resulting in no change in the total amount available for this purpose other than the net increase of \$30,500 referred to above.

(4) An increase of \$399,000 for pay and postal costs pursuant to P.L. 87-793, consisting of:

(a) An increase of \$81,800 for pay costs pursuant to P.L. 87-793. (An over-all explanation of increases for pay act costs is included in the Preface to these Explanatory Notes in Volume 1.)

(b) An increase of \$317,200 for additional postal costs pursuant to Public Law 87-793 consisting of \$312,000 under the subappropriation for penalty mail and \$5,200 for postal costs of the Federal Extension Service. (An over-all explanation of increases for postal costs is included in the Preface to these Explanatory Notes in Volume 1.)

PAYMENTS TO STATES AND PUERTO RICO

Federal funds available for fiscal year 1963 for cooperative agricultural extension work within the States and Puerto Rico under the Smith-Lever Act, as amended (\$62,020,000), and for carrying out the provisions of the Agricultural Marketing Act (\$1,570,000) total \$63,590,000.

Payments to the States and Puerto Rico are made directly to designated officers and the funds are disbursed by them in accordance with budgets and programs of work submitted by the State directors of extension and approved by the Administrator of the Federal Extension Service on behalf of the Secretary of Agriculture. As reflected on Table II, at present about 38% of the cost of extension work is being financed from Federal sources and about 62% from State and local sources. The funds are used by the States for the employment of extension workers to carry on cooperative agricultural extension work. Paid extension workers are being assisted by a network of voluntary neighborhood leaders who cooperate in carrying out extension programs.

The use of these funds is indicated in greater detail in the following tables: Table I reflects estimated allotments to the States and Puerto Rico on the basis of rural and farm population. Table II indicates the sources of funds allotted for cooperative extension work in the States and Puerto Rico for 1963, including allotments under the Agricultural Marketing Act. Table III shows estimated direct payments to and contracts with States and Puerto Rico for 1964, indicating those which require offset from State and local funds, those where such offset is not required, and the basis of allotment. Table IV indicates the various classes of field agents employed with extension funds.

Table I

EXTENSION SERVICE APPROPRIATIONS FOR PAYMENTS TO STATES AND PUERTO RICO

	1963	Increases - 1964	Total Proposed for 1964
Payments to States based on Smith-Lever Act Sec. 3(b) and 3(o)2:			
Alabama	\$ 2,169,630	\$ 24,870	\$ 2,194,500
Alaska	102,628	4,798	107,426
Arizona	308,086	7,399	315,485
Arkansas	1,761,880	19,799	1,781,679
California	1,611,224	27,660	1,638,884
Colorado	560,792	10,408	571,200
Connecticut	338,257	8,239	346,496
Delaware	161,346	5,370	166,716
Florida	767,578	15,659	783,137
Georgia	2,274,300	26,987	2,301,287
Hawaii	288,028	5,092	293,120
Idaho	433,128	9,778	442,906
Illinois	1,918,757	32,421	1,949,178
Indiana	1,609,201	29,025	1,638,226
Iowa	1,717,769	30,625	1,748,394
Kansas	1,132,390	18,312	1,150,702
Kentucky	2,177,742	30,240	2,207,982
Louisiana	1,424,469	18,357	1,442,826
Maine	421,907	8,340	430,247
Maryland	606,681	12,613	619,294
Massachusetts	479,024	10,591	489,615
Michigan	1,762,299	30,124	1,792,423
Minnesota	1,643,050	28,582	1,671,632
Mississippi	2,245,717	27,833	2,273,550
Missouri	1,914,095	28,374	1,942,469
Montana	421,608	8,949	430,557
Nebraska	952,862	16,576	969,438
Nevada	120,965	4,625	125,590
New Hampshire	225,565	6,022	231,587
New Jersey	468,172	9,953	478,125
New Mexico	385,807	7,589	393,396
New York	1,687,500	29,527	1,717,027
North Carolina	3,003,246	44,691	3,047,937
North Dakota	650,405	12,125	662,530
Ohio	2,186,375	35,707	2,222,082
Oklahoma	1,474,407	16,745	1,491,152
Oregon	625,297	12,135	637,432
Pennsylvania	2,200,509	35,697	2,236,206
Puerto Rico	a/ 1,929,203	33,954	1,963,157
Rhode Island	126,101	4,680	130,781
South Carolina	1,601,342	22,963	1,624,305
South Dakota	650,987	12,184	663,171
Tennessee	2,210,131	31,411	2,241,542
Texas	3,433,059	39,104	3,472,163
Utah	286,990	6,486	293,476
Vermont	277,830	6,747	284,577
Virginia	1,809,988	26,707	1,836,695
Washington	776,191	14,482	790,673
West Virginia	1,117,522	15,000	1,132,522
Wisconsin	1,643,451	28,631	1,672,082
Wyoming	221,600	5,914	227,514
Subtotal	a/ 60,315,091	960,000	61,275,091
Special need funds Sec. 3(b) Smith- Lever Act	1,544,909	--	1,544,909
Federal administration and coordination Sec 3(o)1 Smith-Lever Act	b/ 160,000	40,000	200,000
Agricultural Marketing Act funds (including contracts)	1,570,000	--	1,570,000
Total Smith-Lever and AMA Payments	63,590,000	1,000,000	64,590,000

a/ Due to Puerto Rico's inability to offset the full amount of the Federal funds, \$249,000 will be available for transfer to provide for increased pay and postal costs in fiscal year 1963.

b/ Appropriated but not available for obligation in 1963. It is proposed to use these funds for increased pay and postal costs.



TABLE II

U. S. DEPARTMENT OF AGRICULTURE

FEDERAL EXTENSION SERVICE

SOURCES OF FUNDS ALLOTTED FOR COOPERATIVE EXTENSION WORK IN THE STATES AND PUERTO RICO
FOR THE FISCAL YEAR ENDING JUNE 30, 1963

STATES	TOTAL FUNDS	TOTAL FEDERAL FUNDS	TOTAL FUNDS FROM WITHIN STATES	SOURCE OF FEDERAL FUNDS		SOURCE OF FUNDS FROM WITHIN STATES		
				SMITH-LEVER ACT	AGRICULTURAL MARKETING ACT*	STATE	COUNTY	NON-TAX
Alabama	\$ 4,718,263	\$ 2,215,631	\$ 2,502,632	\$ 2,184,631	\$ 31,000	\$ 1,547,322	\$ 868,267	\$ 87,043
Alaska	287,128	147,128	140,000	144,628	2,500	140,000	--	--
Arizona	1,230,760	424,786	805,974	421,786	3,000	730,834	75,140	--
Arkansas	3,871,176	1,784,580	2,086,596	1,761,880	22,700	1,510,033	443,755	132,808
California	8,652,799	1,656,224	6,996,575	1,611,224	45,000	5,343,398	1,608,177	45,000
Colorado	2,164,592	691,392	1,473,200	655,792	35,600	816,110	626,790	30,300
Connecticut	1,106,124	344,457	764,667	338,257	3,200	483,018	272,249	9,400
Delaware	447,787	194,195	253,592	170,195	24,000	206,992	5,500	41,100
Florida	3,334,258	788,578	2,545,680	767,578	21,000	1,546,056	999,624	--
Georgia	5,637,787	2,320,726	3,317,061	2,274,300	46,426	1,968,000	1,308,111	40,950
Hawaii	993,418	306,028	687,390	288,028	18,000	687,390	--	--
Idaho	1,617,505	521,407	1,096,098	509,407	12,000	709,098	362,000	25,000
Illinois	5,285,282	1,945,657	3,339,625	1,916,757	28,900	2,229,625	--	1,110,000
Indiana	4,481,189	1,654,501	2,826,288	1,609,201	45,700	1,415,447	1,358,841	52,000
Iowa	5,185,503	1,757,369	3,428,134	1,717,769	39,600	1,698,394	1,622,040	107,700
Kansas	4,904,944	1,237,814	3,667,130	1,186,890	50,924	1,156,461	2,353,293	157,376
Kentucky	4,505,917	2,227,742	2,278,175	2,177,742	50,000	1,530,000	600,000	148,175
Louisiana	4,446,071	1,456,469	2,889,602	1,424,469	32,000	2,573,371	301,931	14,300
Maine	962,074	441,907	520,167	426,907	15,000	348,822	171,345	--
Maryland	2,590,918	654,331	1,936,587	606,681	47,650	1,523,999	412,588	--
Massachusetts	1,973,934	536,024	1,437,910	479,024	57,000	546,196	891,714	--
Michigan	5,340,374	1,897,299	3,443,075	1,762,299	135,000	2,385,312	1,052,013	5,750
Minnesota	3,363,126	1,673,201	1,689,925	1,643,051	30,150	798,627	866,273	25,025
Mississippi	4,571,401	2,280,716	2,290,685	2,245,716	35,000	1,400,000	864,380	26,305
Missouri	4,719,818	2,034,095	2,685,723	1,964,095	70,000	1,664,173	863,360	158,190
Montana	1,376,855	565,908	810,947	555,908	10,000	273,180	479,574	58,193
Nebraska	2,878,060	1,004,862	1,873,198	997,162	7,700	1,172,395	683,253	17,550
Nevada	628,084	207,065	421,019	207,065	--	299,421	121,598	--
New Hampshire	747,474	244,496	502,978	233,646	10,850	299,308	198,470	5,200
New Jersey	2,300,916	485,672	1,815,244	468,172	17,500	1,093,012	722,232	--
New Mexico	1,559,221	507,068	1,052,153	483,308	23,760	729,771	322,382	--
New York	8,110,854	1,751,499	6,359,355	1,687,499	64,000	2,568,696	3,456,486	334,173
North Carolina	8,073,654	3,078,246	4,995,408	3,003,246	75,000	2,890,603	2,065,177	39,428
North Dakota	1,675,070	739,105	935,965	724,405	14,700	422,944	513,021	--
Ohio	4,751,193	2,228,375	2,522,818	2,186,375	42,000	1,295,291	929,590	297,937
Oklahoma	3,932,114	1,543,757	2,388,357	1,474,407	69,350	1,647,725	719,022	21,610
Oregon	3,579,417	721,296	2,858,121	679,296	42,000	2,249,223	608,898	--
Pennsylvania	4,614,177	2,230,509	2,383,668	2,200,509	30,000	1,733,668	650,000	--
Puerto Rico	3,082,663	1,929,203	1,153,460	1,929,203	--	1,076,460	--	77,000
Rhode Island	343,253	130,162	213,091	126,102	4,060	176,536	29,500	7,055
South Carolina	2,954,111	1,608,841	1,345,270	1,601,341	7,500	1,175,000	169,070	1,200
South Dakota	1,739,448	710,788	1,028,660	701,988	8,800	741,660	282,500	4,500
Tennessee	4,493,754	2,236,931	2,256,823	2,210,131	26,800	1,613,998	642,825	--
Texas	7,736,822	3,588,258	4,148,564	3,561,258	27,000	1,928,180	2,220,184	200
Utah	1,111,270	418,190	693,080	399,990	18,200	518,301	174,779	--
Vermont	824,652	302,830	521,822	289,830	13,000	398,165	123,657	--
Virginia	5,165,509	1,834,989	3,330,520	1,809,989	25,000	2,710,559	619,961	--
Washington	2,802,326	863,791	1,938,535	836,791	27,000	1,241,008	697,527	--
West Virginia	2,051,637	1,126,722	924,915	1,117,522	9,200	535,295	385,000	4,620
Wisconsin	4,638,232	1,658,452	2,979,780	1,643,452	15,000	1,528,267	1,451,513	--
Wyoming	969,345	334,381	634,964	329,151	5,230	426,460	208,504	--
Unallotted	113,947	113,947	--	113,947	--	--	--	--
AMA contracts	75,000	75,000	--	--	75,000	--	--	--
GRAND TOTAL	168,621,206	63,430,000	105,191,206	61,860,000	1,570,000	65,704,004	36,402,114	3,085,088

* Preliminary distribution.

Table III. Statement of direct payments to and contracts with States and Puerto Rico, indicating those requiring offset, those not requiring such offset, and basis of distribution as estimated for 1964.

Item	Total Estimate 1964	Basis of Allotment	Amount paid without offset	Amount requiring offset
Payments to States and Puerto Rico	\$63,020,000			
Smith-Lever Act Section 3(b)		\$56,475,091-Fixed by Sec. 3(b) of Public Law 87-749	\$14,513,808	\$41,961,283
		1,544,909-Special needs		1,544,909
Section 3(c)		5,000,000 (\$1,920,000-Farm pop.) (\$1,920,000-Rural pop.) (\$960,000-Equality): (\$200,000-Federal: Extension Service: Sec. 3(c)1)	200,000	4,800,000
Payments and contracts under the Agricultural Marketing Act	1,570,000	1,570,000-Basis of approved projects: and contracts	a/ 75,000	1,495,000
Total, direct Federal payments	64,590,000	64,590,000	14,788,808	49,801,192

a/ Regional marketing contracts.

Table IV. Cooperative extension agents, by organization classes.

Extension Workers by Organization Classes	: July 1, 1960	: July 1, 1961	: July 1 1962
STATE WORKERS:	:	:	:
Directors and administrative personnel .	: 214	: 223	: 238
Specialists	: 2,561	: 2,691	: 2,762
Total, State staff	: 2,775	: 2,914	: 3,000
COUNTY WORKERS:	:	:	:
Supervisors	: 737	: 727	: 727
Agricultural agents <u>a/</u>	: 6,886	: 6,856	: 6,781
Home Economics agents <u>a/</u>	: 4,179	: 4,148	: 4,179
Total, county staff	: 11,802	: 11,731	: 11,687
GRAND TOTAL	: 14,577	: 14,645	: 14,687

a/ Includes 4-H Club agents

STATUS OF PROGRAM

General: The Cooperative Extension Service was established by the Smith-Lever Act of May 8, 1914 as amended by the act of June 26, 1953 and the act of August 11, 1955. Extension educational work is also authorized under the Agricultural Marketing Act of 1946.

For many years Extension work was focused largely upon the problems that impeded improvements in farm production and farming efficiency. These problems were acute and their solution essential to the nation's economic growth and development. Present extension educational efforts are being rapidly expanded and reoriented to cope more effectively and adequately with today's major problems related to our nation's economic growth. These problems encompass the productive use of our total resources, including economic and social adjustment to changing conditions.

Selected Examples of Recent Accomplishments: These activities are grouped by major categories as follows:

- A. Economic and Social Development for Rural People
- B. Farm Income Improvement
- C. Consumer Interest and Family Development
- D. Conservation, Use and Development of Natural Resources
- E. Improvements in the Marketing Systems
- F. Rural Defense Information and Education Program
- G. Other Program Influences

- A. Economic and Social Development for Rural People: During the past year, Extension activities in the area of economic and social development were substantially expanded and accelerated. Early in the year the Federal Extension Service and the cooperating State services were delegated the educational and organizational responsibilities for Rural Areas Development and the rural phases of the Area Redevelopment program. Immediate emphasis and priority were placed on the responsibility for carrying out educational and organizational activities in the redevelopment areas designated under the Area Redevelopment Act. Resources are being devoted to economic and social development in all counties and areas just as rapidly as they can be made available.

Today, the demands for assistance from Extension have expanded to the extent that in addition to providing on the farm assistance it is necessary to work more and more through local leadership and formally and informally organized groups in order to effectively discharge its responsibility. Economic and social development requires the contributions of many people and many organizations and agencies. Accordingly, the needs for educational assistance have changed and broadened to include the interests of an expanding number of farm and nonfarm people and to require the contributions of many disciplines.

At the Federal Level:

In carrying out these expanded and more comprehensive responsibilities for economic and social development, the Federal Extension Service provides overall national leadership and program assistance to the cooperating State services, and in turn to area and county units. During the year, overall organizational and educational guidelines have been published and distributed in support of both Rural Areas Development and the Area Redevelopment Act program. In addition, regional meetings with the directors of Extension and regional RAD workshops were held for the development and training of State leadership. In numerous instances, assistance in organizing State RAD committees and in formulating State programs has been provided. Also provided has been help to States in developing overall economic development plans and in evaluating such projects.

In carrying out the responsibilities for both RAD and ARA activities, continuous liaison has been maintained among the several agencies involved, including the Departments of Commerce, Labor, Health, Education and Welfare and the several bureaus of the Department of Agriculture. The basic concept of RAD is that all agencies will co-ordinate their activities in a single unified development program. Extension's responsibility is to provide organizational and educational leadership in accomplishing this coordinated objective.

The following informational leaflets have been provided in direct support of RAD and ARA activities:

"New Life for Watauga County" -- PA-474

"Can Rural Areas Development Help Your Community?" -- PA-478

"Job Training for Rural People" -- PA-509

"Helping Citizens Committees for Rural Areas Development" -- PA-519

In addition, FES has contributed to informational leaflets and bulletins published by the Department of Agriculture and the Department of Labor.

Cooperating State Services:

The cooperating State extension services are providing the organizational and educational leadership at the State and local levels for carrying out social and economic development within the general pattern of RAD and using the ARA program as one of the sources of financial assistance. During the year, 43 States and Puerto Rico have organized statewide RAD committees. These committees have taken a serious interest in the possibilities of economic and social development through local initiative and unified program development. Under the general guidance and with direct assistance of the Extension Service, 1694 county committees and 159 area committees were organized. These committees have involved more than 50,000 people in more than 10,600 county and area meetings. County and area extension agents have provided the central leadership to this entire activity.

The area and county committees have prepared and submitted more than 550 overall economic development programs and at the end of the year were working on an additional 520. Approximately two-thirds of these were in areas designated under P.L. 87-27, and the other one-third were in nondesignated areas.

A total of 2075 economic and social development projects were advanced to the implementation stage and an additional 1370 projects were being planned as a result of the above committee activities. This represents only a beginning because most of the committees were organized during the year. Many local committees are still in the early stages of program formulation.

The character of the projects being undertaken varied widely, from processing plants of various types involving more than \$1,000,000 investments to numerous small projects benefiting a neighborhood or community. Wood processing and recreation in West Virginia, agricultural sales and processing plants in Missouri, farm vocations and mineral industries in Pennsylvania, paper manufacturing and tourism in Michigan, and numerous small industries to supplement farm income are exemplary of the many projects being planned and developed throughout the country. Many types of public facilities, including sanitation, water, and roads have been implemented and others are being planned to support economic development. Recreational projects are also needed in numerous areas in order to serve both rural people and the introduction of new industries. The primary aim has been to make maximum use of available resources and to train the unemployed and underemployed for employment opportunities locally and in other communities.

Extension has been able to utilize its "community development and improvement activities" and its "program projection" committees in a number of States as a basis for more rapidly getting the RAD and ARA activities underway. Major attention has and will continue to be given to the task of cooperating with the technical action panels and getting their contributions to the overall economic development programs. As all agencies contribute to these programs, the overall economic development programs will constitute a manual for the use of all agencies in carrying out a unified economic and social development program.

Other program activities which are underway in the area of economic and social development for rural people:

1. Iowa Rural People Discuss Public Issues:

Early in 1961 the Extension Service launched a statewide discussion program called the Iowa Future series. A similar pilot program took place in four other States this year--New York, Pennsylvania, Ohio, and Arkansas; and in 1962 about 15 States are planning to do so. It involves cooperation of State extension staff including extension economists and rural sociologists, county agricultural agents and home demonstration agents, specialized resources of other agencies, and hundreds of local leaders in each of the States. People throughout the State were encouraged and assisted in organizing their friends and neighbors into small groups to study specially prepared "fact sheets" on four major subjects and discuss their opinions about them. These topics were: What Do Freedom And Democracy Demand?, What Does Economic Growth Require?, What Are The Business Prospects for Agriculture and Main Street in Iowa?, and What Are The Prospects For Family and Community Life? About 50,000 Iowa adults and 15,000 high school students participated in discussions of these subjects, led by local leaders named by the people themselves. Already these discussions are making a difference. New community improvement projects are underway; changes in local organizations are being effected; public discussions are giving evidence of leader training; revisions in tax policies and local government are under consideration.

2. Changing World Trade Patterns Must be Understood by Farmers:

In addition to numerous national policy issues important to economic and social growth, public affairs education also plays an important role in increasing the understanding concerning many complex international problems. The Extension homemakers clubs have a long history of educational work concerning the programs of UN, UNESCO, International Children's Relief Fund, etc. The changing patterns of world trade negotiations require understanding on the part of U. S. citizens. Extension is assisting rural people in understanding the realities of the European Common Market and the possibilities of similar trade developments throughout the world.

3. Leadership Development: The social and economic development of rural people hinges on effective leadership development at the local level. Of increasing importance is the development of local leaders prepared to assume a broad leadership role in resource development and public affairs. There were about 1,232,000 different local leaders actively engaged in forwarding some phase of the extension program in 1961. They served in varied capacities, such as organization leaders, informal or indirect leaders, project or subject-matter leaders. Some are members of advisory groups assisting in analyzing the local problems, planning their solutions and guiding the program to better serve the community needs. Others help in conducting local events and activities, such as tours, camps, achievement days, result demonstrations, and farm meetings. Their participation has made it possible for the paid extension agent to multiply his effectiveness manifold.

The average leader devotes at least 11 days annually to leadership activities, which equals more than 52,000 persons employed for a full year of 260 work days, or five times the total paid county extension personnel.

- B. Farm Income Improvement: The continuing disparity between farm and nonfarm income is well known. In 1959, per capita income of farm people was only \$965 compared with \$2,216 for nonfarm people. In 1961, earnings per hour of work averaged less than a dollar in agriculture compared with \$2.32 in manufacturing. Farm people can only make sound decisions concerning programs relating to national agricultural policies when they are fully informed. This phase of Extension's educational program is helping farmers and nonfarmers understand the necessity for programs that will bring the production of the nation's farms in balance with demands. It includes teaching farm families to make business decisions that will enable them to use their physical, human, and financial resources most effectively. It aids in the development of services and institutions that facilitate adjustments in agriculture toward income improvement.
1. Improvements in Farm Management Competence: Farmers today need educational assistance at a high level of competence on complex business decisions.
- a. Business Management Reaches Many Farmers Throughout U. S.: More than 1,600,000 farmers improved their operations last year using educational assistance from county and State extension leaders. This included information on the agricultural outlook used by 1,220,000 farmers, income tax management on 550,000 farms, farm record analysis on 430,000, and adjustments in farm operations on over 340,000 farms. Credit, leasing, purchase, transfers, contracts, operating agreements, and other business transactions were improved with extension help in more than 2,800 counties. In 2,500 counties, banks and other firms were assisted to improve their specialized services to farmers.
- In Washington, 5000 farmers are using the new record and inventory books to help them cut expenses, increase incomes, and make sound decisions. Credit agencies are encouraging farmers to participate in extension meetings. Bankers' association conducted three management schools for their membership with extension help. Survey of farm and home planning families shows \$10,000 gain in net worth for a 3-year period compared to \$8,396 for the control group and increases in annual farm net income of \$1,345 compared to \$506.
- In Wisconsin, a 20% gain in net cash farm income was reported by 2,802 farmer families participating in the Farm and Home Development program in 37 counties. Nearly 96% reported using

improved financial records, 87% balanced grain feeding, 78% soil test, 77% ACP, 74% quality roughage, 72% dairy breeding, and 71% production records as recommended by extension agent.

In Kansas, young farm families expanded their operations after a study of their business resulting in more efficient and complete use of their human resources and managerial skill. Nearly 3,600 families participated in the two major farm management programs in 1961. Average income per farm for the State was \$4,400 compared to \$3,429 in 1960.

In Arkansas, last year analysis of 42 farm records showed a 26% increase in average net income for families working with extension agents, while during the same period the net income for average Arkansas farms dropped 17.7%.

Since 1955 when greater emphasis was placed upon Farm and Home Development analysis of farm family records, they have shown higher incomes and better use of income to improve living conditions. Their records show 94% with running water in kitchen and bath, 74% with gas or electric heating systems, and 97% with conventional or automatic washers.

- b. Extension Studying Electronic Data Processing Uses in Farm Management Education: FES is currently giving careful attention, in cooperation with States, to potential uses of automatic data processing designed to provide more information with which farmers may make management decisions. About 20 of the State Extension Services are exploring the use of this type of equipment. In eight of the Northeastern States automatic data processing is done centrally.
2. High Technical Competence: New developments in agricultural sciences are born in public and private research organizations and further developed by the ingenuity of farm people. These new discoveries must be used for efficient production of food and fiber. It is therefore important that each producer be fully informed on innovations and adopt them when they contribute to the efficiency of his farm business.
 - a. Tomato Canning Improvements: In Maryland's tomato canning industry, approximately 50% of the raw stock weight is lost through damaged and unusable fruit, normal removal of the cores and skins, and excessive trimming losses by the manual peelers. Demonstrations were held for the peelers at individual canning plants.

The theme of the demonstration was how the peelers would be benefited by improved peeling methods; less tomatoes to make

their quota, less work, and more money for them as well as reduced costs to owners and a more marketable product. Requests for the demonstration were received from plant owners in Delaware and New Jersey.

- b. New Sedimentation Test on Wheat: The Oklahoma Extension Service helped wheat farmers understand the new sedimentation test on wheat. The soil moisture was high and there was need for additional nitrogen to keep the protein high if Oklahoma was to produce high quality wheat. The farmers and the fertilizer industry responded by increasing the use of nitrogen over 1,000% during the month of February. The tonnage rose to 27,518 tons compared to 2,636 tons the year previous. During the three months of January, February, and March, 80,090 tons of fertilizer were used this year compared with 36,433 tons last year. Farmers can expect an increase of 15 to 20 million dollars from this 4.3 million dollar expenditure. The new fields that were not fertilized are serving as checks to emphasize the importance of nitrogen top dressings.
- c. Overfat Beef Animals: Recommendations designed to avoid the production of overfat beef animals in 4-H projects were prepared jointly by the Rural Youth Committee of the Montana County Agents' Association, the Extension livestock specialists and the Animal Science and Range Management staff of Montana State College. The recommendations include (1) less emphasis on the prime grade of beef, (2) use of less concentrated rations, (3) selection of project calves with more growth potential, (4) establishment of a project time schedule designed to produce calves of the optimum weight and condition, and (5) special emphasis on carcass evaluation contests.

The average outside fat covering on steers at a recent Indiana Beef Show--less than an inch--was the lowest in the four-year history of the competition. The steers, average 968 pounds on foot and dressed about 64% of their liveweight in carcass beef. They had an average loin eye area of 10.4 inches and carried an average of .81 inches of outside fat.

- d. Extension Specialists Emphasize Dual Grading: Extension is working with the beef industry in developing progeny testing programs designed to identify sires with superior heredity for those carcass traits on which the USDA Dual Grading System is based, i.e. maximum amount of high quality lean meat with a minimum of excess fat. For example, extension specialists in 13 Western States reported that 53 beef producers are now evaluating the progeny of 132 beef bulls for carcass merit. For the nation as a whole, 191 breeders of the 4,204 cooperating with Extension in on-the-farm performance programs have been progeny testing bulls for carcass merit. These efforts are

especially significant because it was only in June, 1962 that the first Certified Meat Sire of the beef industry was approved by Performance Registry International. California specialists are using this method of evaluation for beef carcasses in the sire testing program. Kentucky, Texas, Missouri, Colorado, Louisiana, Nebraska, Indiana, and Kansas Specialists are using the principles in beef carcass shows.

Using beef animals of the same age, grade, and weight, researchers have shown that differences of \$25 to \$50 in retail cutout value of carcasses are common. If, over a period of years the carcass value of slaughter cattle is increased by a conservative amount of \$5 per head, the increased income to beef producers of the nation will be \$175 million (based on recent annual slaughter figures of more than 35 million head per year).

- e. Safflower in Arizona: 13,000 acres last year, 60,000 this year ... that's the record of safflower production in Arizona. Plantings may reach 200,000 acres next year. Typifying Extension's role, together with the high local interest is a meeting on safflower called by the County Agent in Cochise County one night last September. Some 200 farmers showed up. Safflower is one of the few crops in short supply. With yields in Arizona ranging from 750 to 1,200 pounds on drylands, 1,600 to 4,000 pounds with irrigation, and current prices \$90 per ton, the magic of the crop is apparent.
- f. Benefits from Quality Improvement: Quality improvements are derived from improved methods resulting from research and carried to farmers by extension workers. For example, in spite of the driest July on record in Southcentral Georgia and adverse harvesting weather, the quality of the peanut crop for 1961 was very high. About 94% of the 268,000 tons of peanuts marketed graded 0.1% or 2% damage. This reflects the increased efficiency of the growers as a result of adopting the latest technical methods in the areas of harvesting, curing and marketing. These methods result in cutting costs and increasing returns.
- g. Training Cotton Ginners to Preserve Cotton Quality: In order to help the cotton industry to hold its markets in the face of foreign production and synthetic competition, the cooperative extension services carry out extensive, continuous programs designed to protect the quality of cotton. An outstanding example of this effort was the

Midsouth Cotton Gin Operators' school held in Memphis, Tennessee, in 1961. Along with other widespread efforts to maintain cotton quality, more than 950 cotton ginnermen from five States attended the two-day sessions.

- h. Brucellosis: Extension is continuing its educational work and cooperation with other agencies to aid in the control of brucellosis. For example, Arkansas, eight years ago was the second highest State in the south with the incidence of brucellosis in cattle. Now five years after a concerted cooperative effort by the Arkansas Livestock Sanitary Board; the Agricultural Research Service; the Arkansas Farm Bureau; and the Arkansas Agricultural Extension Service, the State has been designated a Modified Certified Brucellosis Area. This means that less than 5% of all herds and less than 1% of all animals are infected with this disease.
- i. 4-H Club Members Contribute to Better Production: In California, armed with advance warning from the 4-H'ers, Tehama County fruit and nut growers got the jump on the borer. The forecast of where and when to attack the borers during the brief spring period when they are most vulnerable came from a team of nine young 4-H entomologists, working with Extension Farm Advisors. Growers used a system worked out by University of California scientists, based on careful observations of the twig borers' spring hatch-out. Timing of the spray is vital. The critical period can be three days or less. This short time period is the last chance growers have to catch the twig borer population in a single, vulnerable stage. Normally the critical period ranges from May 20 to June 10, depending on the district. But on May 8, based on the 4-H members' computations, the warning went out from the Farm Advisor's Office that the twig borer pupae were hatching out early. The alerted growers were able to move into their orchards several days ahead of schedule.
- j. Drought Emergency: Since mid-July when the drought attained disaster proportions in the Northeast, local costs of hay had ballooned to a peak of \$80 per ton. A Pennsylvania extension agronomist phoned his Federal Extension Service counterpart to report pastures dried up, the hay crop a failure and farmers frantically seeking supplies, but with little success. Shortly there was a similar call from New York. Both urgently needed information as to out-of-state sources. Under leadership of FES agronomists, specialists in nearby States with hay drew together dozens of sources for use of their fellow extension workers in the stricken areas. There, county agents spread this information to farmers

and handlers who were frantically seeking hay. Shortly, supplies began to roll in from outside, costs dropped to \$50 per ton and drought-plagued farmers had gained relief.

3. Participation in National Agricultural Programs: Current legislation dealing with supply control for improved farm income provides alternatives available to individual farmers. Farmers are required to make group decisions concerning the application of programs to their industries. The effects of programs will be different on individual farmers and their opportunities to participate will vary. Farmers must analyze immediate, intermediate, and longrun effects on agriculture as well as on them and their families. Such analysis and understanding requires educational programs providing objective information and basic principles of economics.
 - a. 1962 Feed Grain Program: The job of informing producers about the 1962 Feed Grain Program received impetus with the holdings of regional meetings. Extension personnel from administration, information, farm management and other areas attended these events along with State Agricultural Stabilization and Conservation Service personnel to gain a better understanding of program objectives and provisions. State extension services were supplied sizeable amounts of materials on the program. Extension editors played an important part in setting up the press conferences. Consider the situation in the important corn State of Iowa in the spring of 1961. Planting season was near at hand. The new Feed Grain Program was signed into law on March 22, and 175,000 Iowa farmers needed to know about it in a hurry. Within 48 hours, a big educational effort was starting to hit its stride. The Iowa extension team of administration, subject matter and information personnel sat down with the Agricultural Stabilization and Conservation Service committee to plan a fast-moving effort to let the feed grain producers know about the new program.

The day the bill became law, these materials were on their way to State offices of Extension and Agricultural Stabilization and Conservation Service. The official regulations and interpretations were sent. Suggested press, radio, and TV materials were prepared. Budget forms were developed to provide farmers an easy means for figuring out how well the program fit their particular farm. This was a team effort between agencies--and between Federal, State, and county services--to place important information in the hands of those who had a decision to make--175,000 Iowa farmers.

- b. Eradication of Hog Cholera and Swine Brucellosis: Federal hog cholera legislation was enacted into law (Public Law 87-209) on September 6, 1961. It directed the Secretary of Agriculture to initiate a national hog cholera eradication program. The regulations will become effective November 5, 1962. The new regulations prohibit interstate movement of swine infected with hog cholera. They also prohibit, except under specified conditions, interstate movement of swine exposed to the disease, swine fed raw garbage, virulent hog cholera virus (after Jan 1, 1963), and swine treated with virulent virus (after July 1, 1963). An information and education program similar to that in effect in some States is being developed at the National level to increase public understanding and insure the effective cooperation needed to eradicate hog cholera. Special materials developed for use in the States are being called to the attention of Extension Veterinarians and Swine Specialists. In anticipation of the national effort, several States have already organized State hog cholera committees to coordinate the educational and regulatory phases of the program. The other development took place after October 1, 1961, when the Agricultural Research Service, in cooperation with the States, launched an intensified drive against swine brucellosis. While eventual eradication of brucellosis in all swine herds is the goal of this program, major emphasis at the start will be on the "validation" of individual purebred herds as brucellosis-free.

It was Extension's responsibility to provide educational leadership for both of these programs in close cooperation with Agricultural Research Service.

- c. The Southwest Screwworm Eradication Program: The Southwest Screwworm Eradication Program began in mid-February 1962. The Cooperative Extension Service provided the educational leadership. Technology and regulatory duties came from the Agricultural Research Service and the Texas Animal Health Commission. The Southwest Animal Health Research Foundation, an organization of livestock producers and sportsmen, have contributed \$1,800,000 toward a goal of \$3,000,000 to match USDA funds in the Program. Accomplishments to date: (1) prevention of the normal screwworm migration to Louisiana and Arkansas (2) fewer screwworms than normal in Texas, New Mexico, and Oklahoma. Future plans include elimination of the overwintering screwworm population in the United States and establishing and maintaining an artificial barrier to prevent reinfestation by screwworms from Mexico. Normal screwworm infestations have been estimated to cost \$100,000,000 annually in Texas. Several other States have significant losses. The Screwworm Eradication Program in

the Southeast States was completed in 1959. Costs of preventing reinfestation of the southeast States can be significantly reduced through success in the Southwest Eradication Program.

C. Consumer Interest and Family Development: Over 10 million home-makers are now participating in the home economics program. Over 700,000 of them trained by Extension agents are now serving as voluntary local leaders. Educational work in this area is concerned primarily with serving needs and interests of individual consumers and of families as the major consumption units in our society. Home economic extension workers are now providing reliable information needed in such areas as selecting goods and services, meeting needs for food, clothing, housing, equipment, furnishings, other household necessities, credit, health recreation, education and transportation.

1. Nutrition Education: Physical fitness, an important national goal, is dependent to a considerable extent on adequate nutrition. Yet today the diets of many families lack elements essential to good health. Contributing factors are low-income, lack of education, misinformation and inability to choose on an informed basis. During 1961 extension nutrition education programs were developed to overcome these obstacles and to reach the following groups in our population found to be most poorly nourished. These include teenagers who are the poorest fed members of the family. Six out of 10 girls and 4 out of 10 boys need improved diets. The next most poorly fed is the mother of child-bearing age. There are 25 million women with children under 18. Her ability to apply proper nutrition knowledge to family meals is important to the family's health and vigor. Over 17 million people 65 or older need education concerning adjustments in their patterns of food intake with advancing age. Low-income families must have assistance with their food problems.

To help these segments of population, Extension workers have held many nutrition workshops. Professional workers in other public and private agencies who make recommendations about food and nutrition but do not have ready access to new research findings have attended these workshops. For example, the home agent in Maricopa County, Arizona conducted a workshop series in March, 1962 with 1300 home economics teachers, dietitians, public health workers, doctors, and dentists in attendance. Thirty-nine counties in Arkansas are striving to improve teenage nutrition as are many others across the Nation.

These counties have:

a. Created an awareness on the part of parents for the serious need for improving this group's nutrition.

- b. Created a council composed of 37 girls representing 14 different groups (4-H Clubs, Girls Scouts, Health and Physical Education classes, etc.) to work together promoting better nutrition for teenage girls.
- c. Conducted studies on improving teenage nutrition in 4-H Clubs.

In Wisconsin 4-H Club daughters and their mothers have had an opportunity to take part in research similar to that conducted in nutrition classes at the University. Selected 4-H members enrolled in the foods-nutrition program were contacted and both mother and daughter were asked if they would like to take part in a rat feeding demonstration. The animals were fed for two months on various diets. Each time the diets were reviewed, emphasis was placed on nutrients that were present and those that were lacking. Foods that contain the lacking nutrients were shown in pictures on a chart. The lessons were then related to human nutrition.

Donated Foods: In all States using donated foods, special literature is prepared to assist low-income families to make good use of the foods. Home demonstration agents have organized county-wide educational programs; local leaders have conducted demonstrations at distribution centers and have enlisted the cooperation of others to assure that families not only know how to use donated foods, but also learn what other foods to buy to provide balanced diets for their families. Kentucky reports that many counties reached more than 95% of the recipient families by this method. In Milwaukee, Wisconsin, the Extension Service put its demonstration on wheels to transport it to the neighborhoods where welfare families live. The Health Department furnished a trailer which was outfitted with kitchen equipment and seating for 25 or 30 people. In Houston, Texas, home economics Extension workers, together with the Houston Housing Project and Community Council, conducted a nutrition education program in a 1,000 unit low-income housing project.

Since many donated foods were not being used widely, due to lack of familiarity, the program included information on the nutritional value of donated foods and their use in meal planning. Homemakers trained by Extension agents and home economists in industry assisted with teaching. Officials of other housing projects in Houston have requested a similar program for their units. In the pilot areas for the Food Stamp Plan Project, greater emphasis was placed upon education on food buying and making the best use of the stamp plan to improve family diets.

Work with Senior Citizens: The White House Conference on Aging held in January 1961 brought together more than 2,500 delegates confronted with the urgent health, social and financial problems of the Nation's 17 million persons 65 and older. As a result, a series of recom-

mentations were drawn, some of which have already been acted on. Many older persons throughout the Nation are reached by, and participate in, the educational programs of the cooperative Extension Service. This older group is requesting assistance with their unique problems relating to food and nutrition, supplementary income sources, health, family relationships and handling partnership arrangements, wills, etc. In St. Louis, Missouri, home economics workers are directing their efforts toward three senior adult groups--those 45 to retirement age who need to begin serious planning; those 65 who are still active but whose income is reduced and are at a loss to fill their time; and those who have withdrawn from activities and who may be dependent upon others. The work is integrated with that of other interested agencies and beamed toward the particular needs of each group.

2. Housing, Equipment and Furnishings: In 1956, when the last National survey was made, over 3 million houses outside metropolitan areas were delapidated, 7 million lacked facilities--with about 3 million having no running water. A program known as the Cooperative Plan Service Exchange worked out in cooperation with other USDA agencies is striving to bring the latest research results in farm housing and farm service buildings directly to the farm user in inexpensive and usable form. The plans are developed at Beltsville and distributed by the extension services. The State extension engineers reported the following results for 1961:

17,500 house plans distributed to farm families
128,500 farm service building plans furnished

Out of 54 families who attended a housing workshop in one county in Washington, 40 completed plans for new homes and 19 plans for remodeled homes. In addition, 210 families updated kitchens, water, electric and heating systems and 350 families were helped with selection, proper use and care of household equipment. In a Texas county, Extension received 32,000 calls for home plans and 1,250 families visited a practical moderately priced home exhibited by a local contractor at the instigation of the home demonstration agent with the result that these families acquired information on construction, floor plans, financing, insuring and furnishing a home. The Fort Hall Indian Reservation in Idaho has many examples of modern homes planned and furnished with assistance of the home agent. In Florida, the Seminoles, in South Dakota, the Sioux, and in Montana, the Crows have extensive housing programs underway.

3. Clothing and Household Textiles: Extension programs in clothing and textiles include information for families who buy read-to-use clothing and furnishings as well as for those families who select fabrics for home construction. In both cases they need criteria for judging performance and care of various textiles. There has been an increasing demand for help in choosing appropriate clothing

as an aid in adjusting to new geographic, occupational, and social situations. A good example of this is found in Iowa where a program designed to help farm youth develop a feeling of security and confidence through being appropriately dressed has spread rapidly from one county throughout the State and is now being expanded in several other States. Business communities as well as parents are giving active support to this program which is preparing thousands of rural young people to compete for jobs in adult life. While it is possible to clothe a family with ready-to-wear, the continuing demand by homemakers for assistance in clothing construction indicates that they view home sewing as a way of saving clothing dollars and obtaining more satisfactory garments. Classes in construction are a major part of the Extension clothing program in all States. Through this work the homemaker not only develops sewing skills but also gains a knowledge of fabrics and construction details which helps her be a better consumer and manager of her family's total clothing picture.

4. Consumer Information: Consumer education is an essential part of such home economics Extension programs as clothing, foods, housing, home furnishing, and household equipment. It is the major focus of family economics programs where homemakers learn how to use credit wisely and how to figure true interest rates on time purchases. Special consumer information programs sponsored by the Extension Service, often in cooperation with business interests, help consumers understand the marketing system and the role of the government in consumer protection and their responsibility to be informed. Good examples of such programs last year were consumer days in Texas on housing, household equipment, and clothing. In Delaware and New Hampshire consumer forums conducted for representatives of all women's organizations emphasized the roles of consumers, business and industry, and of government in supplying goods and services to individual families.
5. Human Relations and Child Development: A major concern throughout all States is the need of children and youth for mature adult guidance. Homemakers who realize family responsibilities are asking for more help on the basic principles of child development and family relations. The first step in improved discipline and character building for youth is education for parents. For example, in Alabama a study and discussion program for homemakers has emphasized the joint responsibility of the home and school in helping children develop into emotionally mature, self-disciplined adults. Objectives of the program include helping youths choose and prepare for careers in adult life. Thirty-one States have programs in family life and child development.

6. Home Industries, Youth Opportunities and Community Facilities: Home demonstration women have been especially active in assisting Rural Areas Development work. See A. Economic and Social Development for Rural People.
7. Farm Safety: The annual accidental death toll among farm workers is the highest of any occupation in the United States; the economic loss from farm work accidents runs into millions. Significant technological advancements are taking place in agriculture, including farm mechanization, rapid expansion in the use of agricultural chemicals and increased use of electrical power. Rural traffic patterns are increasing in complexity. These facts make it imperative that agriculture vigorously increase its safety efforts on an enlightened basis. Current farm safety programs, projects and activities have demonstrated a capacity to reduce farm work accidents. A major key to the reduction of such accidents is an educational program to inform and motivate farm residents and farm employees to recognize, eliminate, and avoid hazardous conditions and follow safe practices. Extension has carried on a continuous program at both the adult and 4-H levels to reduce farm accidents.

D. Conservation, Use and Development of Natural Resources: The Extension Service has a public charge to help develop a realistic appreciation of the need for wise use of resources. The Federal-State Cooperative Extension Service has helped farmers, ranchers, foresters, and the public learn about the importance of conservation and the best use of resources, including soil and water. Farmers and communities change their ways of using land and other resources if they believe it is to their advantage to do so. Extension agents make heavy use of demonstrations and voluntary local leadership to help farmers see the advantages of better practices. They also work closely with farm organizations, industry, civic, and many other groups, and both private and public agencies. In addition, agents use press, radio, television, tours, and many other methods to advise people of facts and opportunities for adjustment and decision-making. Most soil, water, wildlife, recreation, and other resource development and conservation programs involve local, as well as State and Federal support, sponsorship, laws, and other considerations, and relationships. Because of their joint County-State-Federal employment, extension agents are in an excellent position to help local people draw on the many agencies involved. At the same time, they give educational support to these agencies.

1. Forestry Education: There are about 258 million acres of commercial forest land distributed among 4 1/2 million small ownerships. This is about half of the available commercial forest land of the country and in general it is poorly managed. The other half in public and industry ownership is under good management. Small woodlands are not.

Our per capita consumption of saw timber in the year 2,000 will remain about the same. Our total per capita consumption of wood as such will decrease. However, our population is expected to double by the year 2,000 so these small private woodlands are the key to future wood supply.

- a. Motivation Study: The small woodland owners are not managing their woods properly. Some 18 States have reported they are in the beginning stages of this forestry motivation study. Some have already begun their field work and by early fall the data will start to be assembled.
 - b. 4-H Club Demonstration Forests: In Florida, the most noteworthy 4-H accomplishment in forestry has been the establishing of 16 demonstration forests. These forests are being used as laboratories where 4-H members receive practical experience and training in forest management practices. Acquisition of the demonstration forest has been through the pulp and lumber industries of the State. Funds from timber removal will go into 4-H funds for furthering forestry and 4-H Club work.
2. Weed Control: Brought to focus recently is a picture--the first of its sort--of our \$3.8 billion weed problem. In a joint study the Cooperative Extension Service and Agricultural Research Service portray the problem nationwide, and in detail by regions and by crops. Farmer experiences with herbicides on nearly 53 million acres are analyzed to reflect which weed problems have been met fairly satisfactorily and which require further research. The report has been enthusiastically received for the guidance it affords by workers in research, education and the chemical industry alike.
 3. Soil Testing on the Increase: More than two million soil samples are tested each year. These tests help the farmers select the fertilizers and liming treatments that will return the greatest profits to them. Farmers get more for the fertilizer dollar, thus cut costs. These soil treatments cost the farmer more than two billion dollars annually. The State and county cooperative extension services help farmers, farm managers, and lime and fertilizer dealers work out soil treatments that will be most effective in reducing the production cost per unit and make the greatest contribution to the conservation of natural resources based upon these tests. The Extension Service instructs farmers how to sample the soils of their farm and how to use and conserve their farm lands with these soil amendments and plant foods. This service has nearly doubled in the last four years. There is a continued need for the expansion of this work and an intensive program has been arranged to encourage this work. This work is largely self supporting by nominal charges for such tests.

4. New York Explores Camping and Recreation on Private Lands: Throughout the State during 1961 emphasis has been put upon the need for additional outdoor recreational areas and facilities. Exploratory work was done in a dozen counties on developing fee recreation areas, fee hunting, and fee fishing on private lands. A regional meeting to explore the development of family camping and recreation on private lands was held in cooperation with the Camping Council and the New York State Conservation Department. The meeting, held in eastern New York, attracted nearly 150 persons.

- E. Improvements in Marketing Systems: This area of work deals with economic information on changes in demand, values, preferences and attitudes essential for agriculture to adjust to changing market conditions. It also includes work with cooperatives to improve farmers' bargaining power. This phase of Extension's educational program is also concerned with adjustments in processing plants and marketing firms to maximize their contribution to economic development (RAD), and increased efficiency of the marketing system.

Purpose of the program--conducted with producers, assemblers, processors, distributors, and consumers and dealing with both economics and technology--is to reduce marketing and processing costs and expand the market for farm products. As a result, farm income should be increased and consumer costs reduced.

1. Marketing and Resource Development: In a large proportion of the RAD areas one of the prospects for development, which is prominent among local leaders, is a new or improved marketing or processing facility. Extension is receiving an increasingly greater number of requests for assistance to help RAD committees determine the optimum combination and use of resources with respect to selecting alternative processing and marketing facilities. With the assistance from the State Extension Services, other USDA agencies, Land-Grant Universities, and other State groups, increased assistance is being provided local groups. Accomplishments have been included under A. Economic and Social Development for Rural People.
2. Improving the Efficiency of Marketing Firms: Marketing firms have not applied many of the more efficient technological and management practices developed by research. Farmers and the general public have a great stake in an efficient agricultural marketing system which is under continuous pressure to increase margins.

Vast Food Industry Needs Educational Assistance: One-fifth to one-quarter of the food eaten by American consumers reaches them through quantity food service establishments. More than 70 million meals each day account for \$18 to \$20 billion of the estimated \$65 billion Americans spend annually for food. At the turn of the century, approximately one meal in 20 was eaten away from home.

Today, as the result of industrialization, urbanization, high mobility of population, and the increasing employment of women in industry, one meal in every four to five is eaten in a quantity food service establishment. In this area are many small, independently owned and operated units. Many of these individual owners are not educated, trained, nor experienced to be executives in this highly competitive field. The result is one of the highest rates of failure among enterprises.

Two years ago, the Missouri Extension Service employed an extension economist to specialize in this market in cooperation with the Missouri Restaurant Association. Activities are directed by a Faculty-Industry Advisory Committee, composed of representatives of the university faculty and of interested trade and professional associations and State departments. While determining the educational needs of the quantity food service market through research, on-campus short courses and field clinics have been conducted. "Food Service Industry Career Guidance Councils" have been formed in two major metropolitan areas to work with the local school systems in providing adult vocational level food production employee training. Resource material for these courses was furnished by the specialist. He also has conducted workshops and educational meetings for local associations, worked with food service firms in consultation and in management case studies, and prepared extension circulars and bulletins on food service operating problems. Also, in Missouri, the marketing specialist in food service programs was instrumental in saving \$100,000 in the layout and planning of the food service operation for five stores through his educational work with a drug company in Springfield.

Food Distribution Conference: In Topeka, Kansas, a three-day 3rd Annual Food Distribution Research Conference was held during June. This conference had as its purpose "to provide the food industry with opportunities for improving the level of management and efficiency in food wholesaling and retailing." This conference enabled the Cooperative Extension Service to perform effectively its "educational" functions through the exchange of research information between the food industry, USDA, and private research organizations which encourages the practical and rapid adoption of research results. Cooperative Extension Service specialists assisted in the planning and conducting of this conference in cooperation with research and industry representatives.

Retailers Profit from Extension Assistance: In Illinois, as a result of an Extension analysis of a store belonging to a 135-store chain, produce sales increased 25% and total sales volume from \$15,000 per week to \$20,000 per week. Seven super-markets were built as a result of Extension's assistance with market analysis and site locations. Ten additional stores were

incorporated where similar changes in layout and equipment resulted in increased sales and lower operating and labor costs. One firm operating 23 stores credits these modifications with contributing to an additional \$60,000 net profit for fiscal year 1961 over the previous year. As stores generally increase their efficiency competition will cause much of these increased profits to be passed on to either producers or consumers.

In Puerto Rico, four groups of independent food retailers have been given assistance for the purpose of establishing retailer-owned wholesale operations to enable the smaller independents to face competition from corporate chains and to modernize their retailing outlets and improve management practices and cooperative advertising. One group counseled by the Extension Service started with only 16 commodities including basic staples. The number of items stocked by this warehouse has now been increased to 250 items and sales have reached \$600,000 a year from the 35 grocers being supplied by the warehouse.

In Massachusetts, extension specialists analyzed the operations of a wholesaler together with the retailer activity involved with the following resulting improvements:

- . Established an incentive plan for retail account which has a potential annual savings of \$200,000 annually to the warehouse if the retail stores meet the plan's requirements.
- . Approximately 30,000 cases of merchandise permanently eliminated from the warehouse inventory with a \$27,000 savings,
- . Developed a plan to eliminate return of damaged merchandise to warehouse, saving about \$11,000 annually.

Commodity Industries Benefit from Marketing Programs:

- a. Egg Marketing: In Tulsa, Oklahoma, as a result of an educational program by consumer marketing specialists on egg quality identification and characteristics, a demand developed for higher quality eggs. The extension poultry marketing specialist, producers, and egg marketing firms were informed of this demand. As a result of the Tulsa extension consumer marketing specialist determining, analyzing, and reflecting the consumer desires and demands back to the marketing and production systems, a high quality egg program was initiated and developed which egg marketing and production people in the area verify has definitely increased sales and marketing efficiency. For example, one marketing firm's grade A egg sales were approximately 40% of their total business before the educational program was initiated. Now grade A egg sales comprise 80% of its business.

- b. Fruit Marketing: An example of the work carried out in fruit marketing by Arkansas is the development of a commercial peach processing firm in Johnson County. The county agent and the fruit and vegetable marketing specialist gathered and provided information on local peach production, trends in peach processing, location of competing firms, organizational methods, costs of processing and marketing, and financing methods. Then a firm was established by raising about \$150,000 locally and by a loan of \$125,000 from the Small Business Administration. In 1961, over 250,000 pounds of peaches were frozen and were marketed to manufacturers of frozen desserts and other outlets. Marketing peaches through this processing firm helped to alleviate the over-supplied fresh market.
- c. Dairy Marketing: In Iowa, consolidation of the dairy marketing industry continues with average production per plant increasing. During this past year there were four dairy firm consolidations involving 10 associations in the State. A reasonable estimate of the increased income would be \$288,000 as a result of the consolidation of the four plants.
- d. Wood Products Marketing: On September 24-27 in Athens, Georgia and October 8-11 in Fort Collins, Colorado a workshop will be held for extension marketing economists and extension wood products specialists. The workshop is the culmination of a three-year contract between Federal Extension Service and North Carolina State College for the purpose of developing an educational program for wood processing firms. The workshop will be particularly pertinent to marketing economic and technology wood product specialists and will deal with work methods, pricing practices, economies of scale, and managerial decision making.
- e. Testing and Demonstrating a New Use of Wheat: One of the promising developments of wheat is using a derivative from it for wood pulping processes. This is currently being tested both by the ARS Northern Utilization Laboratory and the FS Madison Forest Products Utilization Laboratory. The Kansas Extension Service is currently working with a 150 ton capacity mill in Hutchinson, Kansas, in analyzing the feasibility of processing pulp by utilizing this process. This size mill would utilize approximately 2 1/2 million bushels of wheat. The Federal Extension utilization specialist stationed at the Northern Utilization Laboratory is working with the Kansas Extension Service.
- f. 4-H Club and Older Youth Accomplishments in Marketing Work: In 1961, in Arkansas a new State livestock and meat grading activity was substituted for the livestock judging contest in

order to give 4-H Club members training which would be of more practical value. One of the Little Rock stockyards made their facilities available for live animal grading. A local packing plant cooperated in providing facilities for meat grading. The winning team was awarded a trip to one of the large terminal livestock markets where they observed livestock marketing and meat packing practices. Funds for the trip were provided by the Arkansas Independent Meat Packers Association.

The Pennsylvania State University in cooperation with the Federal Extension Service has conducted and evaluated a "Town and Country Business Program" for older teenagers and young adults. This program was tested with 28 different groups in 21 different counties both urban and rural in Pennsylvania. Evaluation has also been carried out in 22 other States. The major purposes of this program have been to (a) provide youth with a better understanding of business, (b) give youth an opportunity to explore and discuss various employment opportunities closely related to their background, (c) provide a better insight to marketing for those planning toward a career in farming, (d) show youth the need and advantages of training and education, and (e) teach some basic economic facts to the young people.

- F. Rural Defense Information and Education Program: The Cooperative Extension Service has been given responsibility for developing an educational program to acquaint rural people with the risks of nuclear attack and the steps they can take to reduce these risks. Since our national security depends in large degree on the farmers' ability to perform a double job protecting their families and themselves and knowing how to produce under radioactive conditions, Extension is furthering a program to develop in rural people a "built-in readiness" to meet such an emergency. Each State extension service, and the Federal Extension Service, have appointed staff members to plan and coordinate activities to carry out the above objectives.

FES has conducted three workshops on radioactivity attended by extension staff from 34 States. As a result, each State extension service has personnel qualified to provide leadership in this subject-matter field and in turn, have held similar training sessions for county personnel. FES has initiated a series of fact sheets, intended to acquaint the rural public with various aspects of this problem. State extension services use these, by adapting them to their local situation, or prepare similar material for local use. FES is developing a series of presentations on the subject supplemented by a series of 2 x 2 colored slides, which should contribute materially to the resources of our county extension workers. Many agencies, public and private, are working together. For example, this service is cooperating with Forest Service in rural fire defense planning. Each State has a fire defense plan, which in many cases Extension helped prepare.

The States moved quickly to carry out defense educational programs. In Florida, the level terrain and high water table make above-ground shelter necessary. Extension's agricultural engineer is studying fallout shelter plans with nuclear scientists from the University of Florida to adapt designs to Florida conditions.

In Texas, agents conduct county rural civil defense programs as part of their on-going extension programs. A series of live television programs were produced by Extension Service and a central Texas network. Six 30-minute programs were presented.

In West Virginia, the 4-H Club Safety Program selected civil defense as its 1961-1962 State-wide program with about 1,500 Clubs participating. As a result, many families obtained first-aid and other supplies for survival in time of disaster.

York County, Virginia, secured the film "Civil Defense" for showing at all Club meetings and each member surveyed his home to prepare for emergencies while Kansas 4-H Clubs obtained the Rural Civil Defense Information Kit for every club in each county to promote civil defense in the member's community.

G. Other Program Influences:

1. Extension Serves the People of the United States: In 1961, there were about 11,000 county extension workers serving approximately 3,100 counties in the States and Puerto Rico.
2. Mass Communications Vital in Reaching Vast Population: Extension agents worked with local newspaper editors in preparing about 763,000 educational news stories. They participated in more than 366,800 radio broadcasts and made nearly 20,000 television appearances. Seventy-nine percent of the counties are now using radio to aid in reaching farm and nonfarm audience. They distributed over 38 million bulletins, circulars and pamphlets of the USDA and their State agricultural colleges and other agencies in connection with office calls, farm and home visits, meetings and other requests for help. The agents, and Federal and State extension leaders are experimenting with vending machines, dealer distribution, and other cheaper and more wide-spread ways of making localized Extension publications available. The agents are making use of many telephone, direct mail, exhibits, leaders and other ways of getting needed information to wider audiences who can use it. The agent in Naussau County, New York, for example, has turned to a telephone answering service in which he uses tape recorders. He received over 100,000 calls last year. Emphasis is being placed on communications training and helping the State extension leaders keep abreast of changing problems to be better prepared to meet their broad responsibilities as the educational arm of the Department.

- a. Readable Publications: The Service has been paying special attention to making its popular publications more readable and interesting. A recent comparison of Extension publications issued in 1943 and 1960 by Idaho, Mississippi, Nebraska and Vermont shows that much improvement has been made. In 1943 less than one-half (49%) of the publications were written at the 6-9th grade reading level, which is considered an easier reading level for a broader section of the population, while in 1960 about 71% were at this level. The publications improved from a "dull" rating to an "interesting" rating.
 - b. Use of Radio by County Extension Agents: Underway throughout Extension is a closeup study of how county extension agents are using and could better use radio. The number of agent programs over the country have grown to more than 1,000 every day. Many new small stations and the changing type of radio programing are offering extension agents many localized possibilities for a broader type of educational information. The study will involve sample agents sending all radio material they use to regional listening panels for analysis and further study. The aim is heavier extension use of radio in the broad areas of adjustment and public affairs education and with nonfarm as well as farm audiences. The study will develop effective patterns and staff training plans to those ends.
 - c. Telling "The Agriculture Story": State Extension Services continued informational programs informing the nonfarm public about agriculture's contributions to society. Orders have been received from 46 States and Puerto Rico for 109,000 copies of leaflets on "The Agriculture Story." Since this effort started in late 1961, more than 600,000 leaflets have been distributed by direct mail to newspaper editors, radio and TV station managers, bankers, local businessmen, officers of women's clubs, farm organization leaders, legislature, and other opinion leaders. Twenty-two of 31 States responding to a recent questionnaire indicated they were using the information in newspaper and radio releases, talks to civic groups, and other ways. Generally favorable reaction to the leaflets was reported.
3. Continuous Programs of Evaluation and Training Basis of Extension's Sustained Improvement:
 - a. Extension Research Aids in Bettering Extension Programing: There is widespread desire to improve the program building process as a means of improving the quality of extension work. Research in extension over the past six years has developed standards for evaluating programs and provided an extension programing model. To date several hundred State

and county extension workers from more than a dozen States have assisted with testing and refining the standards. Now local and State extension workers are applying the standards to their work so as to improve the quality of their educational effort.

Closely related to programing is determining the program made as the result of extension effort. Drastic changes in the reporting system have been initiated with emphasis being put on measuring changes that result from extension work. This in turn provides information that aids in better programing. Here again extension workers are finding this a tremendous help in increasing the efficiency of their efforts. Special studies are being conducted to determine the most effective and efficient ways to reach and assist different segments of the population such as low-income farmers, low-income city families, Spanish speaking Latin-Americans, and urban home makers.

- b. Extension Workers are Better Trained: Land-Grant institutions have, between 1956 and 1961, nearly doubled the number of graduate courses available to extension workers. During this same period the number of Master's degree programs in Extension Education offered has more than doubled. Extension workers have responded to opportunities and encouragement. In 1956 there were 199 extension workers on full-time study leave; by 1961 the number was 376. In 1961, 1161 workers were enrolled in graduate credit courses while on the job. As a consequence over 70% of the State extension office staffs now have Master's or Doctorate degrees, and one of every seven county extension workers has an advanced degree.

- 4. Extension Provides Educational Support for Other Public Agencies: Extension agents are performing an important function in helping farmers understand (1) the interrelationships of the several programs; (2) a basic understanding of the programs of these agencies; and (3) the possible applications to specific individual local situations. County extension agents spent 7% of their time in 1961 working with Federal, State, and county agencies in carrying out their programs. Some of these agencies are:

Federal: Agricultural Stabilization and Conservation Program Committee, Soil Conservation Service, Farmers Home Administration, Social Security Administration, Fish and Wildlife Service, Forest Service, Bureau of Indian Affairs, Rural Electrification Administration, TVA, Selective Service System, Bureau of Land Management, and Farm Credit Administration.

State: Departments of Agriculture, forestry, health, education, welfare, and highways; also State employment services.

County: Soil conservation districts, vocational agriculture and home economics departments.

5. State Extension Services Aided by Federal Extension Service in Increasing Effectiveness: Federal Extension Service staff members work with State Extension staffs on the appraisal, adjustment and overall development of administrative, management, and organizational programs.

- a. Organization: The Federal Extension Service continued to give assistance to States in making studies of their over-all organization to meet the increased management needs concerning financial records and reports, and improved budget techniques. In this connection, as a result of increased use of electronic accounting machines and automatic data processing equipment by the Universities changes in State Extension Service accounting procedures have been needed. FES management personnel have worked with several States in the revision of accounting procedures to take advantage of the use of such equipment.

Studies currently underway in several Extension Services have demonstrated the benefits to Extension programs that can be obtained by cooperative efforts of Federal and State Extension Service staffs in studying present policies, procedures and organization to implement necessary changes and adjustments. Following these studies, reports covering comments and recommendations were sent to the State Directors. Implementation of these recommendations should greatly improve and strengthen their operations, and in addition some dollar savings should be realized due to the elimination of certain unnecessary practices.

- b. Procedural Simplifications: The consolidation of the large number of Federal-State projects to secure greater subject-matter synthesis, over-all program integration, staff coordination, and simplified budgets was completed. Revised plan of work, reporting, and fiscal procedures were partially developed and, when completed, will be implemented in fiscal year 1963.

The revised procedures will result in reduction of time and effort in the preparation of the documents and less paperwork in maintaining information needed for inclusion in the reports particularly at the county level. In addition, the documents and reports should be more useful for the purposes of immediate supervision, public reporting, and general program and administrative management.

STATEMENT OF OBLIGATIONS UNDER ALLOTMENTS AND OTHER FUNDS

(Includes only those amounts which, by November 30, 1962, were actually received or programmed for 1963 or 1964. Since work for other agencies is performed on a service basis, at the request of those agencies and for their benefit, it is not practicable to estimate in advance the amounts to be received in most cases.)

Item	: Obligations, : 1962	: Estimated : Obligations, : 1963	: Estimated : Obligations, : 1964
Allocations and Working Funds	:	:	:
(Advances from other agencies):	:	:	:
<u>Expenses, Agricultural Stabilization</u>	:	:	:
<u>and Conservation Service - For techni-</u>	:	:	:
<u>cal assistance to Agricultural</u>	:	:	:
<u>Stabilization and Conservation</u>	:	:	:
Committees in Alaska	\$21,668:	\$6,404:	\$6,404
Consolidated Working Fund, General,	:	:	:
<u>Agriculture - To carry out the</u>	:	:	:
<u>cooperative extension work respon-</u>	:	:	:
<u>sibilities under the Area Redevelop-</u>	:	:	:
<u>ment Program</u>	59,719:	134,000:	137,100
Department of Defense - To conduct a	:	:	:
rural shelter education and training	:	:	:
program	- - :	802,000:	- -
Department of Defense - To carry out	:	:	:
<u>the cooperative extension work in</u>	:	:	:
<u>connection with rural defense in-</u>	:	:	:
<u>formation and education</u>	13,316:	- - :	- -
Agency for International Development -	:	:	:
<u>For training and technical assistance</u>	:	:	:
<u>activities</u>	139,585:	161,548:	168,360
Office of Emergency Planning - For	:	:	:
<u>organizing and conducting a rural</u>	:	:	:
<u>defense information and education</u>	:	:	:
<u>program</u>	39,738:	57,400:	57,000
Total, Allocations and Working Funds ...	274,026:	1,161,352:	368,864
Trust Funds:	:	:	:
<u>Miscellaneous contributed funds:</u>	:	:	:
<u>For cooperative work with land-grant</u>	:	:	:
<u>colleges on in-service training</u>	:	:	:
<u>activities through summer-session</u>	:	:	:
<u>courses for extension workers</u>	5,219:	5,200:	5,200
Obligations under Reimbursements from	:	:	:
Governmental and Other Sources:	:	:	:
<u>Federal Extension Service - For miscel-</u>	:	:	:
<u>aneous services to other accounts ..</u>	54,269:	55,090:	56,342
Total, Reimbursements	54,269:	55,090:	56,342
TOTAL, OBLIGATIONS UNDER ALLOTMENTS	:	:	:
AND OTHER FUNDS	333,514:	1,221,642:	430,406

FARMER COOPERATIVE SERVICE

Purpose Statement

The Farmer Cooperative Service was established following the enactment of the Farm Credit Act of 1953 (Public Law 202, August 6, 1953), which transferred the research and technical assistance work for farmers' marketing, purchasing and service cooperatives, under the Cooperative Marketing Act of 1926 from the Farm Credit Administration to the Secretary of Agriculture.

The Service conducts research, advisory, and educational work with cooperatives and others on problems of organization, financing, management policies, merchandising, costs, efficiency, and membership to help farmers who are members of such organizations improve the operations of their businesses. It also conducts research relating to the economic and marketing aspects of farmer cooperatives as authorized by the Agricultural Marketing Act of 1946 (7 U.S.C. 1621-1627). It cooperates with the Extension Service, Land-Grant Colleges, Banks for Cooperatives, State Departments of Agriculture, and other agencies to bring about better understanding and application of sound cooperative principles and practices. It also advises other Federal agencies on problems relating to agricultural cooperatives.

The Service carries on its work through three program divisions - Marketing, Purchasing, and Management Services. On November 30, 1962, the Service had 104 employees, all stationed in Washington, D. C.

	Estimated Available, <u>1963</u>	Budget Estimate, <u>1964</u>
Appropriation	\$1,158,000	\$1,280,000

Proposed Transfer in the 1964 Budget Estimates

The budget estimates for fiscal year 1964 include \$452,000 for conducting research relating to the economic and marketing aspects of farmer cooperatives as authorized by the Agricultural Marketing Act of 1946. This research was financed by advances from the Agricultural Marketing Service and the Economic Research Service in 1963 and prior years.

The Farmer Cooperative Service has participated in the work authorized by the Agricultural Marketing Act of 1946 from its inception, and it has the technical competence for conducting marketing research useful to farmers and marketing agencies. The proposed transfer in the estimates, in lieu of advances, of \$123,400 from "Marketing Research and Service, Agricultural Marketing Service" and \$328,600 from "Salaries and Expenses, Economic Research Service" to Farmer Cooperative Service for this purpose would simplify budgetary control and administration of the activity, and provide for a review of all research and technical assistance for farmer cooperatives activities at one point in the Budget.

Salaries and Expenses

Appropriation Act, 1963	\$682,000
Activities transferred in the 1964 estimates for economic and marketing research from:	
"Marketing Research and Service, Agricultural Marketing Service" (includes \$4,000 for increased pay costs)	123,400
"Salaries and Expenses, Economic Research Service" (includes \$12,000 for increased pay costs)	328,600
Proposed transfer, 1963, for increased pay costs	24,000
Base for 1964	1,158,000
Budget Estimate, 1964	1,280,000
Increase	<u>+122,000</u>

SUMMARY OF INCREASES AND DECREASES, 1964

To strengthen research and technical assistance for farmer cooperatives	+79,000
Reduction to reflect estimated savings due to the installation of a centralized data processing operation (MODE) for personnel and payroll data	-3,000
For pay act costs pursuant to Public Law 87-793	<u>+46,000</u>
Net increase	<u>+122,000</u>

PROJECT STATEMENT

Project	1962	1963 (estimated)	Increase		1964 (estimated)
			Increased Pay Costs (P.L.87-793)	Other	
1. Research and technical assistance for farmer cooperatives a/	\$1,087,040	\$1,158,000	+\$46,000	+\$76,000	\$1,280,000
Unobligated balance ...	5,960				
Total increased pay costs (P.L. 87-793) .	(- -)	(39,935)	(+46,185)	(+4,170)	(90,290)
Total available or estimate	1,093,000	1,158,000	+46,000(2)	+76,000	1,280,000
Transfer in 1964 estimates from:					
a. "Marketing Research and Service, Agricultural Marketing Service"	-119,400	-123,400			
b. "Salaries and expenses, Economic Research Service" .	-316,000	-328,600			
Transferred from "Reimbursement to Commodity Credit Corporation for special milk program" for increased pay costs	- -	-24,000			
Total appropriation or estimate	657,000	682,000			

- a/ Represents obligations. Applied costs for 1962 are \$1,072,270. The difference of \$14,770 represents, primarily, orders for printing and reproduction services and research contracts placed in 1962, over such services used in that year.
- b/ Includes \$500 estimated to be transferred to "Salaries and Expenses, General Administration," during fiscal year 1963 for the Office of the Inspector General.

INCREASES AND DECREASES

(1) A net increase of \$76,000 consisting of:

- (a) An increase of \$79,000 to strengthen research and technical assistance for farmer cooperatives.

Need for Increase: Cooperatives represent a major method for meeting the marketing and purchasing problems of family farms and for strengthening their bargaining position. They offer a method by which farmers can increase their net incomes through higher returns on farm products marketed, and savings on supplies and services purchased.

Many farmer cooperative associations have problems of consolidating operations and developing sound operating plans and efficient operating methods, and need guidelines and suggestions for improvement. Cooperatives urgently require more information and technical assistance to help them develop into stronger and more effective organizations.

More complex organization structures and multipurpose operations are intensifying problems of management, and member participation and control. More research is needed to assure a strong foundation for advisory, service and educational work, and to give guidance to cooperatives and to Federal and State agencies working with cooperatives. Work is especially needed to determine how economic conditions in low income rural areas can be improved by formation of cooperatives for purchasing, marketing, processing and other necessary services.

Plan of Work: The increase provides for strengthening work in the following areas:

- a. Cooperative marketing. The increasing concentration of buying power by large-scale processors and retailers is adversely affecting the competitive position of farmers and their cooperatives. Moreover, rapid changes throughout the marketing system make cooperative operations more complex and difficult.

Research and service work will be expanded to help cooperatives improve the efficiency of their operations, develop stronger organizations through consolidation, merger and joint operations, and improved pooling and pricing methods.

- b. Cooperative purchasing. Modern farm operations have greatly expanded the need for production supplies and related business services. To do an effective job, purchasing cooperatives must adjust to rapid changes taking place in agriculture.

Research and technical assistance will be expanded to improve operating efficiency, increase savings, improve services and provide the specific quality and type of production supplies needed by both large and small farmers. Research will be undertaken to develop better merchandising practices and distribution systems at the lowest possible cost.

- c. Organization and management. Cooperatives are constantly confronted with the problems involved in improving their organization structures, the skill and capacity of their managements, and the degree to which membership participation and support can be further increased. In the face of rising transportation costs, they must meet demands for improved transportation services on the products they sell and the farm supplies they acquire and handle for their members.

Research will be broadened in the areas of management and boards of directors' functions and performance to make available the experience of proven techniques to all associations.

(b) A reduction of \$3,000 to reflect estimated savings due to the installation of a centralized data processing operation (MODE) for payroll and personnel data. An explanation of this reduction is included in the preface to these Explanatory Notes.

(2) An increase of \$46,000 for pay costs pursuant to P.L. 87-793, consisting of \$23,500 to provide for full year costs of the first step of the pay increase and \$22,500 for fiscal year 1964 cost of the additional increase effective January 5, 1964.

(An overall explanation of increases for pay act costs is included in the preface to these Explanatory Notes in Volume 1.)

STATUS OF PROGRAM

Farmer Cooperative Service conducts research, education, and technical assistance advisory work to improve the 9,300 marketing, purchasing, and related business service cooperatives servicing 3 million farmer members. About four out of five farmers are members of these cooperatives.

The Service acquires, analyzes, publishes and disseminates information on farmer cooperatives to further their sound development. This work is carried on in cooperation with cooperative and general farm organizations, land-grant colleges, Federal and State extension services and State Departments of Agriculture.

Economic and marketing research is conducted on methods, costs, processing, distribution and selling, and transportation of farm products by farmer cooperatives and other firms.

Current Activities: The work of Farmer Cooperative Service contributes directly to increased income for farmers. Improved cooperatives give farmers more bargaining strength, increased returns from marketing and greater savings from joint purchasing. Farmer Cooperative Service helps farmers build strong cooperative enterprises for maintaining their family farms and helps improve rural communities for the benefit of the entire economy. The high cost of marketing farm products and the increased costs of farm supplies and farm business services call for more efficient cooperative procedures, management practices and operating techniques. In response to these conditions, the Service is working in the areas of integration, consolidations and mergers, economic and marketing research, problems of directors, membership relations, public relations, and communications. The Service is finding ways to reduce cooperatives' operating costs and increase their efficiency. The Service is now giving special attention to the following areas:

1. Strengthening Financial Structures. The Service is currently surveying the capital structure of cooperatives. The study will analyze relationships between size of business and diversity of operations and sources; amounts of equity and borrower capital; determine how net savings are distributed; and obtain information about Federal income taxes paid by exempt and nonexempt cooperatives.
2. Evaluating and Improving Livestock Transportation and Handling Practices. The Service is studying loss and damage to livestock from handling and transportation during marketing and processing. Farmers and their livestock marketing agencies incur millions of dollars of loss each year due to injury, death and other forms of damage during movement to market. Field work is underway to obtain data on losses to livestock from farms and feedlots to initial destinations.
3. Improving Farmers' Bargaining Power Through Mergers and Consolidations. Changes in marketing methods, such as the concentration of buying power, have adversely affected the bargaining position of farmers and their cooperatives. As a result, many agricultural leaders believe that farmers' bargaining power can be increased by integrating,

consolidating and expanding the operations of cooperatives. The Service is now obtaining basic information to determine and analyze the trends and present status of fruit, vegetable and nut cooperatives, and to evaluate their potential economic benefits to growers through greater use of integration, coordination, consolidation and expansion.

4. Developing Cooperative Marketing of Forestry Products. During the past five years the Service has worked with the Forest Service of the Department to help develop forestry cooperatives. The Service is now working in cooperation with the Forest Service to determine how forestry cooperatives can help small woodlot owners improve their marketing methods for forest products. A publication will show how forestry cooperatives can aid woodlot owners. This report will be of great immediate value under the rural areas development program.
5. Determining Ways to Reduce Farm Costs. The Service conducts research and advisory service on improving operating efficiency of farm supply cooperatives to reduce farm costs. Studies include analysis of inventory management in distributing farm supplies to provide more effective and efficient services to farmer-members; ways to develop more efficient bulk distribution programs for fertilizer and lime from plant to farm; appraisal of feed financing practices; and analysis of annual information on organizational features, operations, and services of the major regional cooperatives handling production supplies.

Selected Examples of Recent Progress:

1. Incentive Payment Plans Evaluated. Farmer cooperatives seek ways to improve their operations by increasing employee efficiency and by attracting and holding topnotch personnel. Incentive payment, annuity, and fringe benefit plans such as group insurance, often make jobs more inviting. Recognizing this, farmer cooperatives are showing increased interest in these forms of employee compensation. The Service recently completed a report that offers substantive guidelines to cooperatives contemplating installation of, or changes in, their employee incentive payment programs. The report includes case studies of detailed plans of five midwest farmer cooperatives, and appraises the advantages and disadvantages of the various plans.
2. Findings to Reduce Cotton Gin Power Costs. Cost of power is one of the largest single expense items in ginning cotton. Wide differences in power expenses, sometimes as great as \$1 a bale, exist among gins using equal amounts of power. A recent study compares power expenses for electric, diesel, butane and natural gas power systems. These comparisons can be used by gin owners when choosing between power systems. The results of the study are valuable to gin owners in analyzing effects of horsepower, volume ginned, and rate schedules on power costs.
3. Aids to Management Controls. As a part of a continuing program of research to assist in the management improvement of small processing and marketing firms, a report was recently issued on management accounting. It includes illustrations and procedures for developing accounting and management controls. This type of research provides managers of small organizations with technical management aids to

enable them to compete with large organizations having specialized personnel to provide this service.

4. Methods to Prevent Losses in Transporting and Handling Livestock.

The Service made two recent studies on loss and damage to livestock through handling and transporting during marketing. One study⁷ showed that losses occurring at the market level during transporting and handling sheep and lambs amount to \$2 million a year; abusive handling was a principal contributor to loss and damage; improving the handling of sheep and lambs during marketing and processing could reduce loss and damage and result in increased income to the various segments of the livestock industry. A pamphlet entitled "Safety-Checking Handling Facilities to Reduce Livestock Losses" showed methods for evaluating livestock handling facilities to reduce loss and damage to livestock. The information in this pamphlet is vital to help reduce costs to the producers, handlers and consumers. Many responsible leaders in the livestock industry have indicated that the work of the Service under this project has resulted in improved methods and facilities for handling livestock. Buyers of livestock are in a better position to make bids reflecting a lower expectancy for livestock loss. Thus producer members of cooperatives share directly in the benefits of this research.

5. Improved Feeder Cattle and Feeder Pig Marketing Through Pooling.

Pooling is an improved method of handling whereby livestock are graded and sold in uniform lots of commingled ownership. The Service prepared publications on pooling of feeder cattle and feeder pigs. These publications showed in detail the operations of present pooling agencies and suggestions for establishing and operating successful feeder cattle and feeder pig pooling programs. Marketing efficiency will be improved substantially as a result of the use of this information by the livestock industry and all segments of the industry -- producers, market agencies, and buyers -- will realize thousands of dollars in monetary benefits.

6. Techniques to Reduce Costs of Transporting and Handling Seed.

The Service is studying ways to help growers and shippers develop improved methods and facilities for receiving, drying, storing, and transporting seed. A study of seven regional wholesale cooperatives serving 13 Southeastern States indicates that the position of growers would be strengthened by: More contract production with farmers, use of additional wholesale trucks, obtaining additional transit privileges that apply to a larger group of seeds, additional warehousing and storing facilities, and use of power equipment for loading and unloading.

7. Determination of Acceptable Standards of Cooperative Practices.

Leaders of dairy cooperatives, educational and advisory workers, farmers and administrators of governmental programs needed a basis for distinguishing an actual (bona fide) from an imitation (pseudo) cooperative. A study made by the Service provides a set of measures designed for appraisal of dairy organizations to determine whether they meet acceptable standards as cooperative organizations. Results of this study will (a) assist cooperatives in maintaining organization

policies that will best serve farmers in obtaining maximum returns and stable markets, (b) help prevent farmers from supporting and trusting an organization not fully devoted to their interests, and (c) assist in keeping organizations from gaining the benefits of any legal authority reserved for cooperatives controlled and operated by and for their patron members.

8. Research and Education for Cooperatives Strengthened. The Service sponsored six membership relations conferences throughout the country designed to train directors and employees of cooperatives. It also arranged and conducted a series of annual conferences on Fruit and Vegetable Bargaining cooperatives to discuss ways to improve bargaining methods and techniques. These conferences fill an important role in discussing and understanding common problems and in disseminating information.
9. Nature and Extent of Cooperative Integration in Feed Operations. Feed is an item of first importance in the production supplies distributed by farmer cooperatives and represents more than one-half of the volume of the principal production supplies. A study of more than 4,000 cooperatives indicated that they produced more than 7 million tons of formula feeds. They distributed at wholesale almost 6 million tons of formula and other feeds. Almost 12 million tons of feed were distributed through 5,310 local feed stores and warehouses. Cooperatives manufactured almost 90 percent of the formula feeds they retailed. They delivered to farmers about 47 percent of the total volume of feed retailed, with 46 percent of these deliveries in bulk.
10. Guideposts for Merging Breeding Cooperatives Developed. The Service made a study of five artificial breeding cooperatives to help them coordinate their efforts for the benefit of farmers in the area. A report distributed to the directors and managers of the five associations considers significant economic, financial, organizational, and legal problems that must be solved by the associations' representatives before merging. As a result of the study an early merger is presently being considered by three of the associations, with an ultimate goal of consolidating all five associations into one state-wide association.
11. Utilization of Cooperatives in Rural Areas Development Program. Farmer cooperatives provide a ready-made organizational structure for broad participation in the rural areas development program. Farmer Cooperative Service prepared a kit of publications that provide basic information on the organization and operation of cooperatives. Approximately 1200 kits were distributed to State and local RAD Committees; farmer cooperatives; county agents; REA State RAD representatives; rural church leaders; State cooperative councils; and others. Two publications specifically prepared for the RAD program are Information 23, "Co-ops Have a Place in Rural Community Progress," and Information 20, "The Rural Credit Union - A Place to Save and Borrow." The Service also provided information on how to use cooperatives in rural areas development, and technical advice and assistance in determining the feasibility of using this form of organization in many specific projects, such as marketing, storage, and processing of agricultural products, handling farm supplies and obtaining farm business services.

STATEMENT OF OBLIGATIONS UNDER ALLOTMENTS AND OTHER FUNDS

(Includes only those amounts which, by November 30, 1962, were actually received or programmed for 1963 or 1964. Since work for other agencies is performed on a service basis, at the request of those agencies and for their benefit, it is not practicable to estimate in advance the amounts to be received in most cases.)

Item	Obligations, 1962	Estimated Obligations, 1963	Estimated Obligations, 1964
Allocations and Working Funds			
(Advances from other agencies):			
Consolidated Working Fund,			
General, Agriculture - For			
carrying out responsibilities			
and authorities delegated			
under the Area Redevelopment			
Act	\$9,500	\$38,550	\$31,200
Agency for International			
Development:			
For expenses in connection with:			
training and technical assist-			
ance activities	14,000	20,000	18,800
Total, Allocations and Working			
Funds	23,500	58,500	50,000
Trust Funds:			
Miscellaneous Contributed Funds:			
For cooperative work with banks			
for cooperatives in producing			
and distributing a motion			
picture on farmer cooperatives.	10,320	180	- -
Obligations under Reimbursements			
from Governmental and Other			
Sources:			
Salaries and expenses	7,329	8,282	- -
TOTAL, OBLIGATIONS UNDER ALLOTMENTS:			
AND OTHER FUNDS	41,149	66,962	50,000

SOIL CONSERVATION SERVICE

Purpose Statement

The Soil Conservation Service was established by the Act of April 27, 1935 (16 U.S.C. 590a-590f). It assists soil conservation districts and other cooperators, watershed groups, and Federal and State agencies having related responsibilities in bringing about physical adjustments in land use that will conserve soil and water resources, provide for agricultural production on a sustained basis, and reduce damage by floods and sedimentation.

Conservation Operations Program Activities. The Service provides technical help to farmers and ranchers in the 50 States, Puerto Rico, and the Virgin Islands, in carrying out locally-adapted soil and water conservation programs. As of June 30, 1962, farmers and ranchers had organized 2,929 conservation districts. The main activities include the making of soil surveys to determine land use capabilities and conservation treatment needs; the publishing of soil survey reports and maps which are useful to the landowners, and other Federal and State agencies and the public; furnishing technical assistance to district cooperators and other landowners in developing plans and applying conservation treatments; the operation of plant materials centers to develop promising new species of plant materials for soil and water conservation purposes; and the development and streamflow forecasts from snow surveys in the Western States to provide for efficient seasonal use of available water supplies for irrigation and other purposes.

Watershed Protection Program Activities. The Service has general responsibility for administration of the Watershed Protection program including the development of guiding principles and procedures. The program includes the making of investigations and surveys of proposed small watershed projects upon application by local sponsoring organizations and assisting in the preparation of watershed work plans; cooperating with local sponsors, States, and other public agencies in the installation of planned works of improvement designed to reduce erosion, floodwater, and sediment damage, and to further the conservation, development, utilization, and disposal of water, including development of recreational facilities and improvement of fish and wildlife habitat; cooperating with other Federal, State, and local public agencies in making investigations and surveys of the watersheds of rivers and other waterways for the development of coordinated water resources programs; and the making of loans to local organizations to help finance the local share of the costs of carrying out planned works of improvement.

Flood Prevention Program Activities. The Service has general responsibility for administration of the Flood Prevention program including the development of the guiding principles and procedures. The program, conducted in the 11 authorized watersheds, includes planning and installation of watershed improvement measures for flood prevention and for the conservation, development, utilization, and disposal of water including the development of recreational facilities and improvement of fish and wildlife habitat; and the making of loans to local organizations to help finance the local share of the cost of carrying out planned works of improvement.

Great Plains Conservation Program Activities. The Service has general responsibility for administration of the Great Plains Conservation Program, authorized by P.L. 1021, 84th Congress. This program, provides for long-term cost-sharing under contracts with farmers and ranchers in designated counties of the ten Great Plains States; technical assistance required to carry out basic conservation plans under contracts which include scheduling, and installing the essential soil and water conservation measures, farming systems, and land use adjustments upon which the contracted cost-sharing arrangements are based; and other assistance to aid in achieving a more stable agricultural production, protect the lands from erosion, and develop farming and ranching practices which partly offset the climatic hazards that characterize the area.

Resource Conservation and Development Activities. The Service has general responsibility under provisions of Section 102, Title I of the Food and Agriculture Act of 1962, for developing overall work plans for resource conservation and development projects in cooperation with local sponsors; to help develop local programs of land conservation and utilization; to assist local groups and individuals in carrying out such plans and programs; to conduct surveys and investigations relating to the conditions and factors affecting such work on private lands; and to disseminate information concerning the benefits, opportunities, and results of these activities. The Service also expects to assist with similar work as a part of its normal assistance to soil conservation districts. Loans to project sponsors for conservation and development purposes and to individual operators for establishing soil and water conservation practices will be made from this appropriation.

Program Administration. The Service maintains its central office in Washington but most of its activities are highly decentralized in 50 States and Puerto Rico, six cartographic units, six engineering and watershed planning units, and about 3,200 area and work unit headquarters which carry on the technical programs. In addition, the Service has specialists in the fields of agronomy, soils, biology, forestry, information, plant materials, and range conservation who are attached to the Washington office but located at various points in the field, to provide for necessary program coordination and the technical assistance in these specialty fields.

As of November 30, 1962, the Soil Conservation Service had 14,869 full-time employees (545 in Washington and the remainder in the field) and 2,545 part-time employees. The latter are generally employed in the field during seasonal periods when there is need for additional assistance in applying conservation practices.

	<u>Estimated Available, 1963</u>	<u>Budget Estimates, 1964</u>
Appropriated funds:		
Conservation operations	\$94,150,500	\$99,453,000
Watershed protection	61,418,000	63,992,000
Flood prevention	25,343,000	25,576,000
Great Plains conservation program	12,359,000	14,640,000
Resource Conservation and development	- -	6,275,000
Total	<u>193,270,500</u>	<u>209,936,000</u>

Summary of Appropriations, 1963, and Estimates, 1964

Appropriation Item	: Estimated Available, 1963	: Budget Estimates, 1964	: Increase (+) or Decrease (-)
Conservation operations	: \$94,150,500	: \$99,453,000	: +\$5,302,500
Watershed protection	: <u>a/</u> 61,418,000	: 63,992,000	: +2,574,000
Flood prevention	: <u>b/</u> 25,343,000	: 25,576,000	: +233,000
Great Plains conservation program ...	: <u>c/</u> 12,359,000	: 14,640,000	: +2,281,000
Resource conservation and development	: - -	: 6,275,000	: +6,275,000
Total	: 193,270,500	: 209,936,000	: +16,665,500

a/ In addition, \$4,910,769 is available from prior year balances.

b/ In addition, \$4,270,717 is available from prior year balances.

c/ In addition, \$77,385 is available from prior year balances.

(a) Conservation Operations

Appropriation Act, 1963	\$90,705,500
Transferred to "Operating Expenses, Public Buildings Service, General Services Administration" for space rental	-55,000
Proposed supplemental, 1963, for increased pay costs	<u>3,500,000</u>
Base for 1964	94,150,500
Budget Estimate, 1964	<u>99,453,000</u>
Increase	<u><u>\$5,302,500</u></u>

SUMMARY OF INCREASES AND DECREASES, 1964

To accelerate soil surveys and publication of reports	\$443,000
For planning soil survey work in urban areas	\$132,000
For assistance to an estimated 30 new soil conservation districts	\$825,000
To increase rate of applying soil and water conservation practices	\$1,072,500
Reduction to reflect estimated savings due to installation of a centralized data processing operation (MODE) for personnel and payroll data	-282,000
For postal costs pursuant to Public Law 87-793	\$40,000
For pay act costs pursuant to Public Law 87-793	<u>\$3,072,000</u>
Net increase	<u><u>\$5,302,500</u></u>

PROJECT STATEMENT

Project	1962	1963 (estimated)	Increase		1964 (estimated)
			Increased		
			Pay and	Other	
			Postal Costs: (P.L. 87-793)		
1. Assistance to:					
soil conserva-					
tion districts:					
and other					
cooperators:					
a. Soil sur-				(1):	
veys	\$15,298,439	\$16,330,000	\$568,000	\$575,000	\$17,473,000
b. Conserva-					
tion plan-					
ning and ap-					
plication of:					
practices .	72,555,392	76,553,500	\$2,490,000	\$1,615,500	80,659,000
c. Snow sur-					
veys	413,665	518,000	\$23,000	--	541,000
d. Operation					
of plant					
materials					
centers ...	638,771	749,000	\$31,000	--	780,000
Subtotala/	88,906,267	94,150,500	\$3,112,000	\$2,190,500	99,453,000

(Continued on next page)

Project	1962	1963 (estimated)	Increase		1964 (estimated)
			Increased		
			Pay and	Other	
			Postal Costs: (P.L. 87-793):		
Unobligated balance	739,721:	--	--	--	--
Total increased costs (P.L. 87-793):					
Pay costs .	(--)	(3,500,000):	(f 3,072,000):	(f 202,500):	(6,744,500)
Postal costs:	(--)	(20,000):	(f 20,000):	(--)	(40,000)
Total available or estimate .	<u>b/ 89,645,988:</u>	<u>94,150,500</u>	<u>(3)</u>	<u>c/</u>	<u>99,453,000</u>
Transferred to "Operating ex-penses, Public: Building serv-ice, General Services Ad-ministration"	<u>f79,012:</u>	<u>f55,000</u>			
Proposed supple-mental for increased pay costs	<u>--</u>	<u>-3,500,000</u>			
Total appropria-tion or esti-mate	<u>89,725,000:</u>	<u>90,705,500</u>			

a/ Represents obligations. Applied costs for 1962 are \$88,921,316. The difference of \$15,049 reflects, primarily, the excess of obligations paid in 1962 over orders placed in that year.

b/ Includes \$3,700 estimated to be transferred to "Salaries and expenses, General Administration" during fiscal year 1963 for the Office of the Inspector General.

c/ Includes \$39,609 for mandatory reimbursement to Employees Compensation Fund for payments made from that fund in fiscal year 1962 as provided by P.L. 86-767.

INCREASES AND DECREASES

(1) An increase of \$575,000 to finance cost of soil surveys, in 1964 fiscal year, as follows:

(a) An increase of \$443,000 to accelerate soil survey mapping and the publication of additional soil survey reports.

Many adjustments in land use are underway and others will continue in the period just ahead. These adjustments and changes are being made in an orderly way where soil maps have been prepared and used as a basis for deciding upon future land use and treatment alternatives. In addition to the regular uses of soil information for conservation planning, soil maps are being widely used in determining appropriate locations of highways, airports, schools, subdivisions, municipal water systems, parks and recreational areas.

There is a pressing need to accelerate soil survey work on private farm and ranch lands as a basis for planning and applying a sound soil and water conservation program. There is also an urgent need to accelerate progressive soil surveys, and the preparation of soil maps to guide land use in areas where rapid changes are now taking place.

This proposed increase would provide for mapping about 1 million added acres in the 1964 fiscal year. Acceleration of this work would include necessary laboratory work, soil classification, interpretation, and publication of reports. This proposal to accelerate the field work on soil survey is in line with objectives to inventory the Nation's soil resources in the next 15-year period, and to publish the information within 20 years.

(b) An increase of \$132,000 for planning additional uses of soil survey in urban areas.

The continued expansion of urban communities into rural farming areas and population growth nearby, requires additional uses of soil survey information. Urban planners, public officials, and other need more data and information to fill their specific needs. The Service proposes to assign key personnel to work with other Federal agencies and with local community leaders in appraising their needs, in studying soil characteristics that are significant in urban and urban-fringe planning, and in developing a coordinated interagency plan of work to provide additional needed soil surveys.

(2) A net increase of \$1,615,500 to assist 30 new districts and to accelerate the rate of applying soil and water conservation practices in 1964 fiscal year, as follows:

(a) An increase of \$825,000 to provide technical assistance to farmers and ranchers in 30 new soil conservation districts to be formed in 1964.

Land owners and operators in those States not yet covered by soil conservation districts continue to form new districts and to add acreage to other existing districts. An estimated 30 new districts are expected to be organized in the 1964 fiscal year. A total of about 20 million acres will probably be added to present district acreage. Farmers and ranchers in the new districts will be ready and anxious to proceed with the conservation work needed on their lands. The Service should be prepared to furnish technical assistance to these districts when they are formed and ready to carry out their local program responsibilities. This increase would provide necessary staff for the 30 additional districts (or large additions to existing districts) expected in 1964.

(b) An increase of \$1,072,500 to increase the rate of applying soil and water conservation practices on farms and ranches of district cooperators.

Recognition and understanding of land use problems has created great farmer-rancher interest in protecting their land and water resources. The technical workload on application of planned practices has pyramided as increasing numbers of district cooperators have begun applying land treatments. The backlog of planned conservation work has been building up year

after year. There is urgent need to provide more timely assistance to district cooperators who are ready and able to proceed with needed conservation work on their lands.

The recent emphasis on making needed "land use adjustment", as provided in the Food and Agriculture Act of 1962, has placed added responsibilities upon SCS work unit staff to help farmers and ranchers apply increased amounts of vegetative practices.

As large acreages of cultivated farm lands are shifted out of crop production to other land uses such as grass, trees, reservoirs, recreation, and the like, more local assistance will be needed to help apply the planned practices.

(c) A decrease of \$282,000 to reflect estimated savings due to the installation of a centralized data processing operation (MODE) for payroll and personnel data. An explanation of this reduction is included in the Preface to these Explanatory Notes.

(3) An increase of \$3,112,000 for pay and postal costs pursuant to Public Law 87-793, consisting of:

(a) An increase of \$3,072,000 for pay costs pursuant to P.L. 87-793.
(An overall explanation of increases for pay act costs is included in the Preface to these Explanatory Notes in Volume 1.)

(b) An increase of \$40,000 for additional postal cost pursuant to Public Law 87-793. (An overall explanation of increases for postal costs is included in the Preface to these Explanatory Notes in Volume 1.)

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The 1964 Budget includes \$39,609 (an increase of \$30,726 above the amount appropriated in 1963) for mandatory reimbursement to the Employees Compensation Fund for payments made from that fund in the fiscal year 1962 on behalf of Soil Conservation Service employees. The increase for 1964 is included in the program increases discussed in the foregoing justifications. An overall explanation of payments to the Employees Compensation Fund is included in the Preface to these Explanatory Notes in Volume 1.

STATUS OF PROGRAM

Current Activities: The Act of April 27, 1935 (16 U.S.C. 590a-590f), in recognition of the wastage of soil and moisture resources on farm, ranch, and forest lands of the Nation resulting from soil erosion and the damages caused thereby, authorized a program of measures to be carried out to prevent it. The Soil Conservation Service was established as the technical agency of U.S.D.A. to carry out provisions of the Act.

The work of bringing about needed land use adjustments and planning and establishing soil and water conservation measures on farm and ranch lands, which the Act provided for, is carried on primarily in cooperation with soil conservation districts. These districts are local units of government formed under State laws and responsible to the landowners and operators in the districts and to the State legislatures. They are founded upon the principles of local initiative, direction, and control and are formed only in response to the petition and favorable referendum vote of the landowners and operators within the district boundaries. At the end of the 1962 fiscal year, 2,929 soil conservation districts had been formed in all 50 States, Puerto Rico, and the Virgin Islands. Twenty-four States were completely covered by such districts.

The Soil Conservation Service is the technical agency of the Department of Agriculture charged with the responsibility of providing professional leadership in soil, water, and plant conservation. This work is related mainly to the local programs and work plans of soil conservation districts. Soil conservationists and other technicians of the Service are assigned to assist these districts. They work with farmers and ranchers in developing conservation plans which provide for proper land use and the application of needed combinations of soil, water, and plant conservation measures and sound management of individual farms or ranches. Service personnel also provide needed engineering and other technical assistance in establishing such measures on private lands. Thus, the practical experience of the farm or ranch operator is combined with the scientific knowledge and skills of professional conservationists in planning and carrying out locally-adapted programs.

Types of Assistance Furnished by SCS

Assistance being furnished to cooperating landowners and operators and the public generally under this item consists of:

1. The services of soil scientists who make soil surveys and special soils investigations needed for conservation planning. The soil surveys are conducted cooperatively with the land grant colleges and other State and Federal agencies. Published survey reports and soil maps provide valuable information concerning land use which is also needed in other Federal, State, county, and local programs.
2. The services of soil conservationists and other technical specialists who help farmers and ranchers plan conservation programs on individual farms or ranches. These jointly-developed programs for conservation and improvement include orderly adjustment of the use

and treatment of private land. The recommendations made are consistent with the land facts disclosed by the soil surveys and the labor, equipment, and financial resources of landowners and operators.

3. The services of engineers, soil conservationists, and other technicians and aids who provide assistance to farmers and ranchers in installing conservation measures on their lands. This help includes site investigations, plant selections, land surveys, preparation of construction plans, designs and specifications, and performance inspections.
4. Technical assistance to groups of landowners having soil erosion or water control problems that can best be solved by group action. These problems may involve efficient use of water, irrigation or drainage of valuable agricultural land, or stabilization of critical erosion and runoff areas to protect agricultural, industrial, or urban properties from flooding and sediment damage.
5. Water supply forecasts developed from snow surveys in the Western States which serve as a basis for planning for efficient seasonal utilization of available water for irrigation and other purposes.
6. Selection and testing of promising plant materials for conservation purposes to determine their suitability for erosion control or special conservation uses, and cooperation with commercial concerns to promote production and use of new and uncommon strains of vegetative materials needed in this work.
7. Grants to soil conservation districts of earthmoving and other special types of equipment which is acquired from Federal Government surplus at no cost to the Soil Conservation Service. The districts schedule the use of this equipment by farmers or ranchers in establishing conservation practices on their lands. Generally, this equipment is the kind that is not readily available locally, or is not attainable at reasonable cost to the farm or ranch operator.
8. Technical assistance to Agricultural Conservation Program participants in the planning, lay-out, and establishment of specified conservation practices, both within and outside conservation districts. The major share of the total cost of this work is reimbursed to the Service from ACP funds allocated to the respective county Agricultural Stabilization and Conservation Committees.

In addition, the Service also gives some special technical assistance on conservation measures, soil characteristics and limitations, and land use problems to farmers, ranchers, public and quasi-public organizations, and other groups both inside and outside of conservation districts in cooperation with other Federal, State, and local agencies. For example, borrowers under the Soil and Water Conservation Loan Program of the Farmers Home Administration are usually provided with investigative, design, specification, and installation services for the structures or measures for which loans are made.

Consultation and some technical assistance is also being provided to such organizations as State Agricultural Experiment Stations, State Highway Departments, City and County Planning or Zoning Boards, School Boards, and Tax Commissions on runoff and floodwater problems, soils interpretations, erosion control, drainage, and land use. Limited amounts of assistance are provided on occasion to other cooperating groups or individuals on programs to develop better local understanding of erosion, water control, and land use problems, and to encourage more widespread adoption of conservation farming methods.

Radiological Monitoring Defense Assignment

As a part of the Department's overall plan for civil defense, the Soil Conservation Service has been assigned major responsibilities pertaining to radiological contamination. This includes keeping in readiness for implementation a nationwide system of radiological monitoring of agricultural lands and waters, livestock, and of farm commodities stored or harvestable on farms, ranches, or at bin sites. The purpose of such readiness and training is to enable determination of levels of radiation, the degree of contamination, and suggested remedial measures to be taken following an emergency in rural areas. It also pertains to the continued availability and production of food and other farm products in a national emergency.

Much attention is being given to identifying and delineating those kinds of soil which respond differently when contaminated by radioactive fallout. It is important that soils containing an abundance of available calcium be identified and located for food production in the event of a national emergency.

Participation in Rural Areas Development

By assignment in Secretary's Memorandum No. 1448, Supplement No. 1, and other instructions, the Service furnishes technical aid and consultation to State and County Rural Areas Development Committees. Upon request, the Service furnishes soil surveys, interpretations of land use changes, land capabilities, and other local information. Assistance is often furnished to the committees and to other agencies on resource development, public facilities, and location of new industries in rural areas. Most of this work is performed as a regular and normal part of conservation operations in rural communities. The land treatment phases of soil and water conservation on privately-owned lands, along with watershed protection measures, are prerequisites to the economic welfare of rural America. There are also related municipal, recreational, and public benefits as well.

Soil Conservation Districts a Major Factor in Soil and Water Conservation

In 1962, the Secretary of Agriculture published the report of his Land and Water Committee, which defines the Department's objective as follows:

"A major objective of a policy for land and water is that these basic resources serve all the people of the Nation. Those who depend on farming, ranching, and forestry, should be helped to assess their needs and find solutions to problems they cannot solve for themselves....."

Locally managed soil conservation districts have proven to be a dynamic force in resource development and improvement. They have sponsored public understanding of the relationship of soil, water, and plant conservation to overall agricultural policy. They have developed and now supervise action programs to assure an abundant and wholesome food supply for an increasing population. They have demonstrated their ability and willingness to make long-term decisions involving private and public investments. Many of them have made effective uses of land use and conservation facts made available to them.

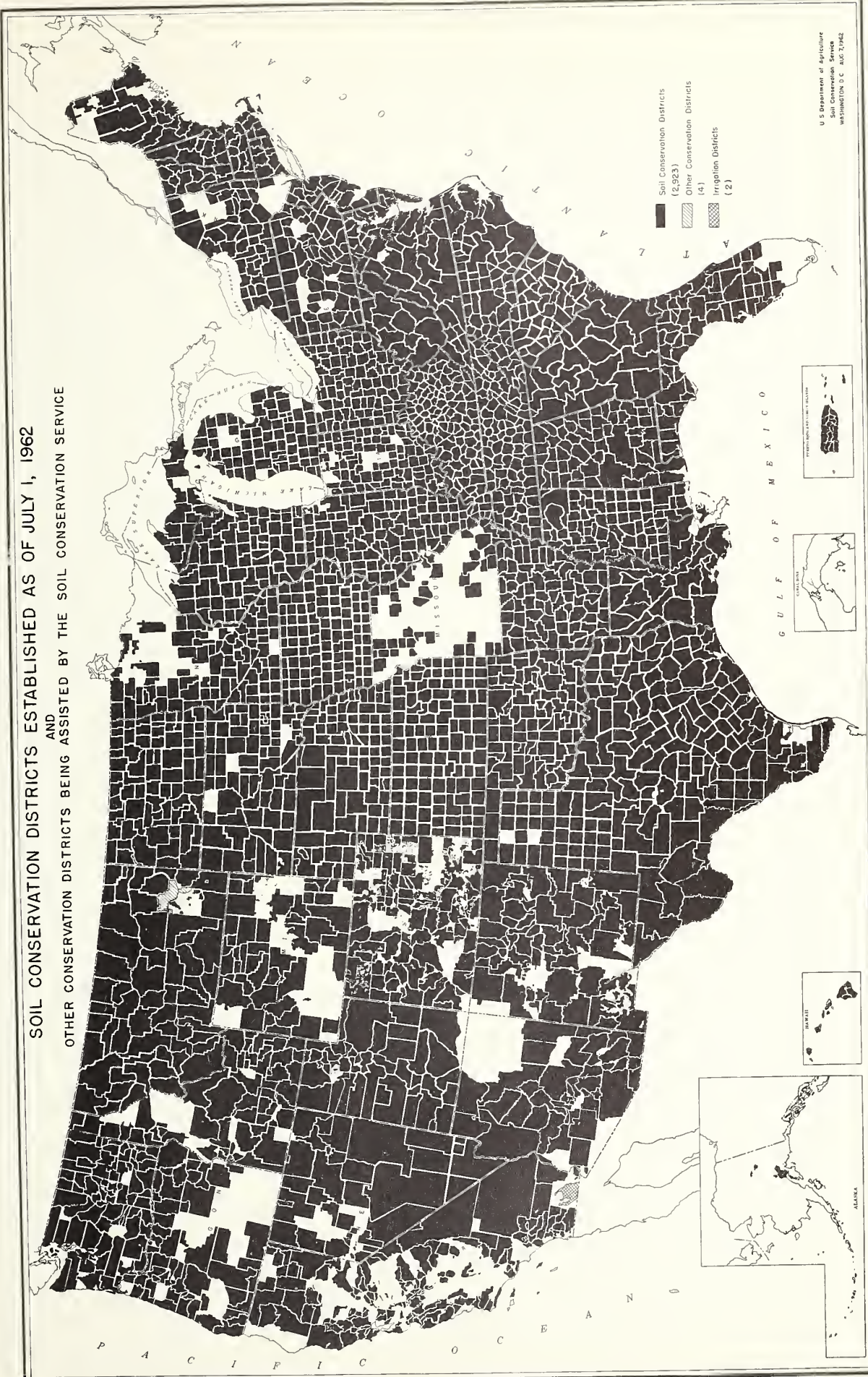
The future requirements of a rising population and the raw materials for thriving industries can be provided on the private lands already being used, if properly planned and treated in time. The governing bodies of locally-organized and locally-managed soil conservation districts can furnish effective leadership for conservation programs on these lands.

Selected Examples of Recent Progress:

New districts organized and changes made in 1962: During the 1962 fiscal year, a total of 55 soil conservation districts, comprising 22,764,899 acres were formed in 16 States; and 112 additions, comprising 10,731,382 acres were made to some older districts. Of the new districts formed, 24 were in territory not previously in districts, and the other 31 were formed through subdivisions of multiple-county districts or by combinations of smaller districts and adjustments in acreage. A total of 26 districts were dissolved during the 1962 fiscal year due to consolidation, changes in boundaries, and other internal adjustments within the provisions of State laws.

Total coverage of districts - June 30, 1962: A total of 2,929 districts comprising about 1,706,000,000 acres had been formed in the Nation as of June 30, 1962. These districts contain 96.4 percent of all the farms and ranches in the Nation. Twenty-four States, Puerto Rico, and the Virgin Islands were completely covered with districts. The formation of districts in most States is nearing completion. (It is estimated that 23 new districts will be formed in 1963, and another 30 districts in 1964.) The following map and tables show the coverage and acreage of conservation districts as of June 30, 1962.

SOIL CONSERVATION DISTRICTS ESTABLISHED AS OF JULY 1, 1962 AND OTHER CONSERVATION DISTRICTS BEING ASSISTED BY THE SOIL CONSERVATION SERVICE



U.S. Department of Agriculture
Soil Conservation Service
WASHINGTON, D.C. 20250

Summary of Conservation Districts Organized as of June 30, 1962

Kind of District	: Location	: No. of : Districts	: Approximate : Area (Acres)	: No. of : Farms
Soil Conservation Districts ...	: 48 States	: 2,887	: 1,691,958,432	: 3,558,120
	: Caribbean	:	:	:
Soil Conservation Districts ...	: Area	: 18	: 2,269,711	: 54,270
Sub-districts	: Alaska	: 10	: 5,872,540	: 1,230
Work Areas (called districts) .	: Connecticut	: 8	: 3,135,360	: 8,292
Grass Conservation Districts ..	: Montana	: 4	: 1,508,433	: 331
Imperial Irrigation District ..	: California	: 1	: 908,195	: 6,129
Elephant Butte Irrigation District	: New Mexico	: 1	: 127,000	: 196
Total Conservation Districts		: 2,929	: 1,705,779,671	: 3,628,568

States and Territories Completely Covered by Districts

<u>Name of State</u>	<u>Date Covered</u>	<u>Name of State</u>	<u>Date Covered</u>
1. Alabama	4-24-41	16. Arkansas	6-2-55
2. South Carolina	5-7-43	17. Wisconsin	11-6-56
3. Delaware	8-9-44	18. Georgia	7-2-57
4. Rhode Island	1-4-45	19. Maryland	4-30-58
5. New Hampshire	4-26-46	20. Tennessee	9-9-59
6. Vermont	6-4-47	21. West Virginia	1-5-60
7. New Jersey	2-26-48	22. Utah	4-6-60
8. Massachusetts	5-24-49	23. Oklahoma	1-17-61
9. Nebraska	3-2-50	24. North Dakota	1-31-62
10. Mississippi	11-9-50		
11. Iowa	2-1-52		
12. Connecticut	7-8-53		
13. Kansas	3-22-54	<u>Name of Territory</u>	
14. Kentucky	4-5-54	1. Virgin Islands	6-29-46
15. North Carolina	3-1-55	2. Puerto Rico	2-10-47

Status of District Organization

Date	: Number of : Districts :	Acreage in Districts		: Number of : Farms ^{1/}
		Total Area	Land in Farms	
<u>Actual</u>	:	:	:	:
June 30, 1961	: 2,900	: 1,689,605,387	: 1,039,957,000	: 3,616,777
Average per SCD	: --	: 582,622	: 358,606	: 1,247
June 30, 1962	: 2,929	: 1,705,779,671	: 1,044,714,687	: 3,628,568
Average per SCD	: --	: 582,376	: 356,680	: 1,239
<u>Estimated</u>	:	:	:	:
June 30, 1963	: 2,952	: 1,726,000,000	: 1,054,000,000	: 3,645,720
Average per SCD	: --	: 585,000	: 357,000	: 1,235
June 30, 1964	: 2,982	: 1,744,000,000	: 1,062,000,000	: 3,667,860
Average per SCD	: --	: 585,000	: 356,000	: 1,230

^{1/} Based on the 1959 Census of Agriculture, and estimated reductions in total number of farms in the United States.

The number of farms and ranches currently reported in conservation districts is substantially less than was reported in 1960, due to reductions in all parts of the country, as disclosed by the latest Census of Agriculture. Trends in recent years have been to larger farms and to more specialization, causing many land use adjustments and changes in conservation plans previously made. The average size of farms has increased from 154.8 acres in 1935 to 302.4 acres at the present time. Continued additions of acreage to existing districts will, however, cause increases in the acreage and number of farms in districts as shown in the table above.

Comparisons of changes in average size of farm in districts and for the Nation as a whole are as follows:

Average Size of Farm: (Acres)	: 1949	: 1954	: 1959
In soil conservation districts	: 175.8	: 200.2	: 231.6
In United States	: 215.3	: 242.2	: 302.4
% change	: (Base)	: +12.6	: +40.6

Since most of the agricultural land in the Nation is now in soil conservation districts (92 percent) it is expected that further increases in average size of farm will cause continued decreases in number of farms per district.

Public Information on Soil and Water Conservation

A principal activity of the Service during 1962 fiscal year was the publication and further development of information obtained by the National Inventory of Soil and Water Conservation Needs. This inventory was conducted over a period of three years by several agencies of the Department of Agriculture under leadership of the Soil Conservation Service.

In addition to three special publications, summary information from the Inventory was incorporated into speeches, magazine articles, and many other informational releases during the year. Public interest in this first authoritative inventory of the Nation's conservation needs remains high.

State Departments of Education are seeking more aid as they publish increasing numbers of their own conservation education materials. North Dakota, for example, last year produced and distributed 10,000 copies of a new teachers' guide on soil and water conservation. The needs for informational materials for rural audiences remain high. There is also a rapidly mounting demand for materials on soil and water conservation that can be adapted for use by schools in urban areas.

During the year, the Alaska State Department of Education cooperated in distributing to teachers 4,700 copies of conservation materials for elementary and high school use.

The Service again cooperated with the National Science Teachers Association in getting soil and water conservation materials included in the "Science Packets" distributed by the Association. The packets go to high school science teachers, librarians, school administrators, and others. This year, 25,000 copies each of "That Land Down There"; "Soil Conservation at Home"; and "Making Land Produce Useful Wildlife" were included in the packets. The National Science Teachers Association also featured "Soil Conservation at Home" in its newsletter to 60,000 teachers.

The Service cooperated with the Camp Fire Girls National Headquarters in the issuance of "Soil and Water Conservation Activities--A Guide for Leaders of Camp Fire Girls". National headquarters distributed the publication to its regions, councils, and individual leaders.

Television is now being effectively used to convey facts about soil and water conservation to very large audiences. Examples are two conservation motion pictures which were seen by an estimated four million viewers in 1961. These films each had a message of interest to both rural and urban audiences. One was "Water for Farm and City"; and the other was "The Dust Is Dying", a report on progress of the Great Plains Conservation Program in the former Dust Bowl region.

Soil Surveys

The soil surveys made by the Soil Conservation Service provide detailed information showing the kinds of soil, descriptions, and management techniques for sustained agricultural production. Their main purpose is to supply factual information for use by landowners and others in making decisions regarding land use and treatment needs.

The Federal leadership of the National Cooperative Soil Survey is assigned to the Soil Conservation Service. The Forest Service, other Federal agencies, all of the State agricultural experiment stations, other State agencies, and many local groups cooperate in the program. The work includes field description and mapping of soils on aerial photographs; necessary laboratory and field investigations; soil classification according to a nationwide system (so that each kind of soil is everywhere given the same name); interpretation of the soils according to their capability under adapted uses; and publication of the results in a standard soil survey series. Prior to publication, copies of field maps and interpretations are widely used in farm, ranch, and watershed planning and by many public and private cooperators to fill their needs.

Interpretations of soil survey information are regularly made to show alternative land uses and conservation treatment needs. These include land capability, woodland sites, and range sites. More intensive detail is also provided on unusual drainage and irrigation conditions. Recommendations for treating the different kinds of soils within a land resource area are part of technical guides used in soil conservation districts.

Progress in Soil Mapping
Conservation Operations Funds

<u>Fiscal Year</u>	<u>Acres Mapped</u>
1961 (actual)	55,750,872
1962 (actual)	60,100,000
1963 (estimate)	62,000,000
1964 (estimate)	63,000,000

As of June 30, 1962, soil maps and descriptions had been prepared for approximately 740 million acres, or for about 40 percent of the land in the United States for which detailed soil surveys are needed. These maps and accompanying descriptions are used in making long-term decisions on land uses and management in farming, forestry, grazing, and other purposes. Such information is also used in rural development programs, rural-urban community planning, and development of wildlife or recreational areas, and in planning the location and construction of highways, airports, and similar engineering works.

Progress in Soil Survey Publication

A total of 26 soil survey reports with accompanying maps were edited and submitted during 1962 to the Government Printing Office for publication. Soil survey reports and maps were published during the year for the following 36 counties or other geographic areas:

Calhoun, Ala.	Hamilton, Kan.	Jackson, Okla.
Kenai-Kasilof, Alaska	Stanton, Kan.	Texas, Okla.
Madera, Cal.	Stevens, Kan.	Loudon, Tenn.
Fraser Alpine, Col.	Montgomery, Md.	Carson, Texas
Trout Creek, Col.	Lenawee, Mich.	Haskell, Texas
Hartford, Conn.	Dodge, Minn.	Lamb, Texas
Gadsden, Fla.	Issaquena, Miss.	Terry, Texas
Douglas, Ga.	Sharkey, Miss.	Rappahannock, Va.
McIntosh, Ga.	Washington, Miss.	Jackson & Mason, W. Va.
Scott, Ind.	Hall, Neb.	Buffalo, Wis.
Van Buren, Iowa	Kimball, Neb.	Crawford, Wis.
Greeley, Kan.	Cortland, N.Y.	Grant, Wis.

At the close of the fiscal year, 43 soil survey reports were in the Government Printing Office awaiting publication. It is expected that 36 edited soil survey reports will be submitted to the Government Printing Office during 1963. A total of 35 survey reports are planned for publication in 1963. An estimated 48 soil survey reports will be published in 1964.

Urban Use of Soil Surveys

Soil surveys are being used increasingly as aids in planning and developing of urban and suburban areas, as shown by the following examples:

The city officials of Danbury, Connecticut prepared a master layout to allocate housing, industry, schools, shopping centers, parks, and roadways for 30,000 additional residents expected in the future. With the soils information to guide them the city planners were able to identify and locate areas that were poorly suited for housing and other types of construction. Danbury now has a plan, supported by soil surveys, that will help to bring about orderly expansion of the city.

Soil surveys are being used by planning commissions and public health officials along the lake frontage in Hillsdale and Branch Counties, Michigan to help prevent further water pollution problems. Soils that in their natural state are not suited for septic tank sewage systems are identified and delineated on the soil maps. Knowing the location and extent of these problem areas has made it possible for local people to avoid those soils as housing sites, or, in some instances, to develop satisfactory means of sewage disposal.

Soil survey work for urban planning is underway around San Antonio, Texas; in two counties in Virginia; in Lake County, Illinois; and other places.

Water Supply Forecasting

Seasonal forecasts of water supplies are urgently needed for irrigated areas of the West. Facts needed for such forecasts are developed through periodic measurements of the snowpack in the high mountain areas by Soil Conservation Service snow surveyors. The general water supply outlook is made available to irrigators and other water users through a series of forecast reports. Suggested action is recommended to farmers and ranchers to cope with

shortages of irrigation water. Irrigators and irrigation organizations make much use of such information. It is also useful to industry, power production facilities, and municipalities. Organizations responsible for multiple-purpose and other water impounding structures use this same information to guide regulation of water level, storage supply, irrigation, and flood prevention.

Snow surveys are conducted in cooperation with many Federal, State, and local agencies, irrigation and power companies, and British Columbia. During the 1962 fiscal year, the Soil Conservation Service made:

3,172	Snow course measurements
231	Aerial marker readings
719	Precipitation gage readings
654	Soil moisture station readings

About 14,747 numerical forecasts were issued for 464 river stations during the year. In addition to the usual releases, much of the data was also released to newspapers, radio, and magazines.

Streamflow forecasts are essential to successful farming operations in soil conservation districts. When farmers and ranchers know the potential water supply well in advance, they can plan their year's operations accordingly. If the water supply is to be short, they can adjust crop acreage to the supply available and avoid severe losses due to wasted effort and expenses. Greater economic returns are obtained when water is efficiently applied to the smaller acreage, rather than deficient applications of water to a larger acreage. It is also possible to concentrate available water supplies on those crops which will yield the highest net return. For example, water may be withheld from certain lands and used on higher yielding field crops to assure better profits.

Technical Services and Consultation

The Soil Conservation Service provides national leadership in soil, water, and plant conservation. While most of the field work is conducted in cooperation with farmers and ranchers in rural communities, assistance is also provided in urban and suburban fringe developments. Consultation, generalized plans, and technical advice are being requested by and furnished to area planners, zoning authorities, recreational groups, and professional organizations as resources permit. These kinds of services are now expected by increasing segments of the Nation, as follows:

- a. Local program planning in areas of high population density and where new development and construction projects are contemplated;
- b. Consultative assistance regarding the necessary technical standards and specifications of engineering and vegetative control measures when requested; and
- c. Follow-up assistance with program improvements involving redesign, replanning, or selection of use alternatives to keep pace with advances in modern technology.

In this way, the conservation program is meeting the needs of rural people and urban people as well.

Farm and Ranch Planning

The number of district cooperators and those who have basic conservation plans have increased steadily since the program began in 1937. By 1952, a total of 1,120,000 farmers and ranchers were cooperating in the locally-developed programs of soil conservation districts. By 1962, the number of active cooperators on the rolls of the districts had increased to more than 1,800,000, about two-thirds of whom had basic conservation plans for all their land. By 1965, the 26th year of district operations, more than 2 million cooperators are expected. The local interest in and support for such work continues to grow.

How to become a cooperator: When a land owner or operator wants technical help, he contacts his local district official. He may, at first, be concerned about a single field, a particular practice, adjustments in crop acreage, or some land-use problems on his own property. Any further action he takes after the district program is explained to him is entirely voluntary.

Development of a plan: Each basic conservation plan is developed progressively toward the objective of proper land use within its capability and treatment according to its needs. Such plans may be prepared in a few weeks or over a period of several years to reflect in blueprint fashion those crop adjustments, land conversions, and conservation treatments needed on that farm or ranch. Schedules for the application of planned treatments are then developed with consideration of the necessary sequence priority of such work, and the expected economic returns. Thus, the application of planned land treatment on a single farm may require five years or more for installation.

Plans must be flexible: Objectives or goals as stated in individual basic conservation plans may be altered, revised, or canceled as the work progresses. The cooperative understanding between farmers and local districts may be changed frequently as they learn more about soil and water conservation. Rapid changes in ownership, consolidation of farms, adjustments in land use, and revised types of farming have increased the need for revisions in plans previously made. In 1962, about 30,000 major revisions of basic plans were made with SCS help. However, some 50,000 revisions should be made annually to update those plans which have been in use ten years or longer.

All of this work requires skilled technical help to meet the increasing workloads of soil conservation districts. One of the more pressing needs is to reduce the backlog of cooperators awaiting help with basic planning. As of June 30, 1962, there were 535,392 district cooperators on the rolls ready to move ahead to do their part of the job. At the 1962 rate of 96,000 basic plans a year, it would require 5 years to close the gap. Obviously, there is urgent need to increase the annual rate of progress.

National accomplishments in farm and ranch planning work in 1962 with estimates for 1963 and 1964 fiscal years are shown in the following table:

District Cooperators and Basic Conservation Plans

Item	Fiscal Year 1962 (Actual)					
	Current Year		Net	Total June 30		
	Increase	Decrease		Number	Acres	
No. of soil conservation district cooperators .	117,606	60,643	+56,963	1,944,054	618,648,096	
Conservation Plans:						
Developed	96,839	46,467	+50,372	1,408,662	426,623,624	
Revised	30,040	--	--	--	15,083,789	

Fiscal Year 1963 (Estimate)						
No. of soil conservation district cooperators .	112,000	70,000	+42,000	1,986,000	635,000,000	
Conservation Plans:						
Developed	100,000	50,000	+50,000	1,458,000	445,000,000	
Revised	35,000	--	--	--	17,500,000	

Fiscal Year 1964 (Estimate)						
No. of soil conservation district cooperators .	110,000	80,000	+30,000	2,016,000	650,000,000	
Conservation Plans:						
Developed	110,000	55,000	+55,000	1,513,000	460,000,000	
Revised	40,000	--	--	--	20,000,000	

As of June 30, 1962, basic conservation plans had been prepared for 31.9% of the operating units in districts, and the 1,408,662 basic conservation plans comprised about 33.5% of the total agricultural land. The following table shows percentages by States:

Basic Conservation Planning in Soil Conservation Districts
By States and Nationally, June 30, 1962

States	Total SCD's as of 6/30/62	Agricultural Land in SCD's	Operating Units in SCD's	Basic Conservation Plans Prepared as of 6/30/62		% of Operating Units Planned	% of Agric. Land Planned
	Number	Acres	Number	Number	Acres	%	%
Northeast							
Connecticut	8	2,598,500	28,200	2,802	303,175	9.9	11.7
Delaware	3	1,126,091	7,570	1,881	290,272	24.8	25.8
Maine	15	4,960,000	19,500	6,439	1,406,750	33.0	28.4
Maryland	24	4,529,941	30,013	11,317	1,596,117	37.7	35.2
Massachusetts	15	4,110,226	31,573	7,472	743,576	23.7	18.1
New Hampshire	10	5,573,248	28,649	4,707	760,780	16.4	13.6
New Jersey	14	4,016,151	29,195	5,811	596,278	19.9	14.8
New York	47	18,264,528	110,590	24,019	3,360,728	21.7	18.4
Pennsylvania	59	13,497,592	125,171	22,082	2,791,514	17.6	20.7
Rhode Island	3	490,200	3,605	1,000	117,705	27.7	24.0
Vermont	13	5,396,692	34,914	5,891	1,209,273	16.9	22.4
Virginia	31	20,283,090	121,366	33,123	5,367,533	27.3	26.5
West Virginia	14	13,854,698	66,089	28,514	4,065,167	43.1	29.3
Total	256	98,700,957	636,435	155,058	22,608,868	24.4	22.9
Southwest							
Alabama	58	31,551,131	105,500	48,080	8,491,582	45.6	26.9
Arkansas	76	29,895,618	133,722	67,630	13,917,851	50.6	46.6
Florida	59	24,583,101	49,713	20,903	6,773,966	42.0	27.6
Georgia	27	34,343,809	152,423	79,553	14,757,324	52.2	43.0
Louisiana	26	25,838,101	91,580	33,208	7,255,560	36.3	28.1
Mississippi	74	27,119,795	141,093	55,618	10,419,842	39.4	38.4
North Carolina	65	20,389,354	240,858	58,047	6,199,132	24.1	30.4
South Carolina	45	17,560,083	103,968	33,602	5,565,541	32.3	31.7
Tennessee	95	20,080,505	174,392	33,236	4,710,687	19.0	23.4
Caribbean	18	2,049,735	53,000	12,883	758,908	24.3	37.0
Total	543	233,411,232	1,246,249	442,760	78,850,393	35.5	33.8
Corumbelt							
Illinois	98	30,381,433	179,166	41,492	7,085,339	23.2	23.3
Indiana	85	17,920,528	107,865	22,091	3,333,866	20.5	18.6
Iowa	100	33,830,950	174,707	52,100	9,584,488	29.8	28.3
Kentucky	121	23,473,864	181,311	49,252	5,779,821	27.2	24.6
Michigan	80	25,633,120	195,931	26,138	3,421,087	13.3	13.3
Minnesota	82	28,371,054	134,242	26,107	5,354,304	19.4	18.9
Missouri	46	13,517,356	72,218	14,241	2,769,214	19.7	20.5
Ohio	87	19,188,589	147,980	44,382	5,885,833	30.0	30.7
Wisconsin	71	21,546,626	107,814	27,752	4,634,306	25.7	21.5
Total	770	213,863,530	1,301,234	303,555	47,848,258	23.3	22.4
Great Plains							
Colorado	96	34,434,027	35,962	13,141	13,930,285	36.5	40.4
Kansas	105	49,825,308	140,867	67,308	21,024,347	47.8	42.2
Montana	63	60,357,196	29,387	9,439	22,189,493	32.1	33.4
Nebraska	87	47,423,436	105,764	44,605	17,100,463	42.2	36.0
New Mexico	58	60,329,115	16,877	9,350	27,244,125	55.4	45.2
North Dakota	73	42,155,498	54,463	24,114	16,242,993	44.3	38.5
Oklahoma	87	41,307,607	140,861	87,348	23,427,474	62.0	56.7
South Dakota	68	43,742,226	61,685	22,762	13,326,430	36.9	30.5
Texas	182	158,500,435	340,646	146,715	80,687,244	43.1	50.9
Wyoming	46	25,848,325	9,272	4,185	7,983,524	45.1	30.9
Total	865	569,923,173	935,784	428,967	243,156,378	45.8	42.7
West							
Alaska	10	2,029,306	1,905	303	43,396	15.9	2.1
Arizona	41	25,851,130	8,272	3,361	5,118,565	40.6	19.8
California	160	34,183,017	105,700	27,589	7,328,229	26.1	21.4
Hawaii	16	3,825,069	4,186	754	915,438	18.0	23.9
Idaho	55	17,626,641	35,000	8,327	3,876,078	23.8	22.0
Nevada	36	8,133,250	3,205	1,545	1,528,848	48.2	18.8
Oregon	60	22,632,611	48,808	9,323	4,760,996	19.1	21.0
Utah	43	15,565,232	23,279	9,483	5,549,376	40.7	35.6
Washington	74	27,821,997	67,842	17,637	5,038,801	26.0	18.1
Total	495	157,668,253	298,197	78,322	34,159,727	26.3	21.7
National Total	2,929	1,273,567,145	4,417,899	1,408,662	426,623,624	31.9	33.5

Land Use Adjustments

As the technical agency of the Department of Agriculture, the Soil Conservation Service helps farmers and ranchers solve land-use problems. Through its cooperative effort with soil conservation districts increasing acreages of low-grade cropland are being shifted from crop production into forage grasses, trees, reservoirs, wildlife areas, recreational sites, etc. The remaining cropland on farms where such conversions are made is usually farmed more intensively. This means application of more intensive cultural, management, and structural measures to protect and improve the productive land base of the United States.

Basic conservation plans developed cooperatively with landowners and operators specify the land uses decided upon by each cooperator, and the practices or combinations of practices needed to keep such land productive. During the five-year period, 1957 through 1961, about 12 million acres of cropland was converted from cultivated crop production into other uses--mainly grass, trees, and recreational uses. Long-term conversions from cropland to other desirable and profitable uses with SCS technical help exceeds 2,000,000 acres annually.

In addition, the Soil Conservation Service also provides technical help to farmers and ranchers in making temporary shifts in land use due to acreage controls and allotments for price-supported crops. Some of these adjustments include selection of the land to be diverted from crop use for one or more years; changes in cropping systems; modifications of conservation practices; and revision of farm and ranch plans to provide a suitable economic return to the cooperator.

A substantial part of the demand for recreational facilities is being met on private farmlands which comprise more than three-fourths of the Nation's land area. As the demands for outdoor recreation, such as fishing, hunting, hiking, picnicking, camping, water sports, etc., increase, there must be more privately-owned land devoted to these purposes. It is imperative that the agricultural environment become more responsive to multiple-uses of our private land and water resources. Many farmers have found income-producing opportunities in sharing their recreational facilities with urban and city friends. The Service is encouraging landowners to permit controlled public use of their land and water resources for such purposes.

SCS Helps to Apply Conservation Practices

After a conservation plan is developed, the cooperating farmer starts applying the planned treatments. The SCS furnishes technical help with practice application until all planned measures are installed, and then, consults with cooperators about the maintenance of applied work.

Technical standards: The differences in land use and many types of farming require more than a hundred soil and water conservation practices in the National program to achieve district objectives. Varying from place to place, many of the vegetative practices are used in combination with structural practices. Technical skill is necessary to know how, and when, and what alternative of land uses are most beneficial and rewarding to the farmer. For that reason, the SCS standards and specifications for suitable practice application are included in technical guides for local uses. Such guides are tailor-made for the districts in each land resource area having similar problems.

Technical help to landowners: A cooperating farmer may need 5 miles of terracing, 3 stock water ponds, and 10 acres of tree planting, along with some recurring vegetative practices. SCS technical assistance is furnished to help survey, design, layout, and install any needed practice. If this farmer decides to install about one mile of terraces each year, one new pond each year, and plant all of the trees (on low-grade cropland) the first year, it would require five years to help apply this conservation plan. For these reasons, the technical workload on application of planned practices increases year-by-year as the number of cooperators increases.

Technical guidance on financing: Some cooperators are financially able to schedule practice application and to pay the investment costs without relying on their annual income. However, most of the low-income farmers who operate low-grade farms usually require short-term loans or cost-sharing assistance to finance their practice application. Unfortunately, these are usually the people, families, and communities where conservation help is most urgently needed. Many of them must have sources of funds to operate the land and to finance improvements. The SCS helps such people to develop income-producing facilities on their land, to realize higher net farm income from new sources, and to move ahead with the jobs they can do for themselves.

Technical assistance with ACP cost-shares: The Service also encourages district cooperators and other landowners to participate in the Agricultural Conservation Program and to use cost-sharing assistance on enduring practices. This includes site selection, determinations of need and feasibility, layout, supervision, and certification of completed work. Such technical assistance assures sound investments of private and public funds. During the 1961 program year, 401,773 ACP referrals for permanent-type practices were received, of which 373,795 were serviced by SCS technicians. About two-thirds of the SCS time used for these technical services was financed through reimbursement from ASCS program funds, and the balance was absorbed as regular district work.

The major practices listed in the following table are those most commonly used throughout the country. The applied amounts of these practices include installations by district cooperators, ACP participants, and other landowners with SCS technical assistance financed with funds provided under this appropriation item, with ACP funds transferred under agreements with County ASC Committees, and technical help provided from other sources.

Type of Major Practices	: Unit	: 1962 Actual	: 1963 Estimate	: 1964 Estimate
Contour farming	:Acres	: 4,382,878	: 4,200,000	: 4,000,000
Cover cropping	:Acres	: 5,169,064	: 5,000,000	: 5,500,000
Crop residue use	:Acres	:14,682,830	:15,000,000	:16,000,000
Stripcropping systems	:Acres	: 688,326	: 700,000	: 750,000
Stubble mulching	:Acres	: 3,650,300	: 3,800,000	: 4,000,000
Hayland planting	:Acres	: 479,975	: 500,000	: 520,000
Pasture planting	:Acres	: 2,129,891	: 2,125,000	: 2,100,000
Proper range use	:Acres	:47,874,598	:48,000,000	:50,000,000
Range seeding	:Acres	: 418,032	: 500,000	: 600,000
Tree planting	:Acres	: 561,496	: 600,000	: 650,000
Critical area planting	:Acres	: 64,674	: 75,000	: 100,000
Terracing	:Miles	: 38,364	: 39,000	: 40,000
Diversion construction	:Miles	: 3,134	: 3,100	: 3,050
Pond construction	:Number	: 53,850	: 53,000	: 52,000
Grassed waterways	:Acres	: 112,151	: 110,000	: 100,000
Irrigation reservoirs	:Number	: 1,852	: 2,000	: 2,300
Sprinkler irrigation systems	:Number	: 3,528	: 3,500	: 3,500
Irrigation water management	:Acres	: 1,262,100	: 1,400,000	: 1,600,000
Land leveling	:Acres	: 409,974	: 410,000	: 420,000
Land grading & smoothing	:Acres	: 394,573	: 400,000	: 450,000
Drainage improvements	:Acres	: 1,792,283	: 1,800,000	: 1,800,000
Mains and laterals	:Miles	: 9,999	: 10,000	: 10,500
Surface field ditches	:Miles	: 7,731	: 8,000	: 9,000
Tile drains	:Miles	: 30,023	: 32,000	: 35,000

Group Enterprise Jobs

Some conservation work requires group action of several landowners, or by public agencies, to solve specific land and water problems which cannot be solved by individual landowners alone. Technical assistance is often necessary to plan, layout, and design needed group measures. Cost-shares are often used also for the mutual benefit of participating landowners under the terms of ACP "pooling agreements." The following table shows the number and acreage of such jobs on which SCS has furnished technical assistance.

Items	: 1962 : Actual	: Total as of : 6/30/62	: 1963 : Estimate	: 1964 : Estimate
<u>Erosion control jobs</u>	:	:	:	:
Number	: 167	: 838	: 820	: 800
Acres	: 116,343	: 1,937,501	: 120,000	: 125,000
<u>Group drainage jobs</u>	:	:	:	:
Number	: 1,803	: 21,040	: 1,800	: 1,850
Acres	: 637,143	: 13,100,517	: 650,000	: 700,000
<u>Group irrigation jobs</u>	:	:	:	:
Number	: 405	: 4,217	: 410	: 420
Acres	: 554,026	: 4,697,124	: 600,000	: 650,000

Irrigators today are the Nation's largest users of water. The amount of water "consumed" in irrigation is nearly thirty times the amount that disappears through industrial uses. The increasing of efficiency in use of irrigation water offers the best opportunity for meeting the water demands in the future. Approximately 32 million acre feet of irrigation water is lost in storage and conveyance each year. Much of this loss can be prevented through improvement of distribution systems and by lining of canals, diversion dams, storage reservoirs, and pipelines. This type of conservation work requires action by local groups who are interested in more efficient use of available water supplies. The Soil Conservation Service furnishes technical help to groups of water users as well as individuals in the planning, designing, and installation of needed irrigation improvements.

A group drainage job is usually the first step toward improving conservation farming on large areas of wet land. Assistance with such jobs is now limited primarily to the improvement of land already in cultivation. Group drains often provide an outlet system into which runoff water from farm ditches can flow. This type of work enables the Service to cooperate with many farmers in the establishing of more complete farm conservation plans, including farm drainage systems.

In some areas, where a group drainage job may be justified, mosquitoes breed in standing pools of water, thereby producing a health hazard. Public health authorities generally recognize the importance of surface water disposal in ridding such communities of mosquito-borne diseases.

Groups Solve Drainage Problems

The Roanoke group job in Jefferson Davis Parish, a portion of the Gulf Coast Soil Conservation District, in Louisiana, was started in 1959 by six farmers who applied for district assistance. A survey was made and drainage improvements were planned for 3,820 acres all of which, except for farmsteads and small plots adjacent thereto, is in a rice pasture rotation. Rice is the main crop, with approximately 1,273 acres being planted annually. Losses in both yield and quality of rice and grazing plants were frequent at numerous places along the ditch for 4.1 miles. The total cost of this job was \$12,103.00 of which the ACP cost-shared \$5,556.80. The remainder was paid by the landowners. In addition to agronomic improvements, this drainage system alleviates conditions that predispose the health of cattle which are an integral part of the economy of the area. A pool of stagnant water near the town of Roanoke was drained, thus eliminating a mosquito breeding area.

Another drainage group job in Evangeline County, Louisiana, was started in 1956 by twenty-two farmers who formed an informal organization and petitioned the Grand Coteau Ridge Soil Conservation District for assistance. Drainage improvements were planned for 1,189 acres with 400 acres of rice, 437 acres of pastures, 220 acres of cotton and 132 acres of sweet potatoes. Frequent losses occurred on 476 acres of poorly drained cropland. The local survey of the drainage problem made by SCS technicians showed that 6.3 miles of main gravity drainage ditch, with nineteen farm and county road crossings would solve the water problem when installed as specified in the plan. The improvements have been in operation long enough to indicate its financial success. The total cost was \$8,103.99 of which the ACP cost-shared \$2,782.64. The Evangeline Parish Police Jury also assisted in this project by installing all road crossings at a cost of \$2,812.00. The remainder was paid by the landowners on a cash basis.

The Ward Bayou Group Drainage Project in Chicot and Ashley Counties, Arkansas, was planned by SCS and constructed by forty-eight landowners in a drainage area of 15,000 acres. Construction cost was \$39,371 of which ACP paid approximately half. Some farmers in this drainage area bought the land for \$40 per acre the year before the project was installed. In May 1958 when the group first met nearly all the land was flooded as a result of a big rain. This year the same farmers were offered \$200 per acre for their land. They did not sell. One of the landowners in the group estimated that the benefits of this project already have exceeded a million dollars.

Irrigators Solve Problems by Group Action

Four farmers in Madison County, in southwestern Montana, recently requested assistance from the local soil conservation district to help them reorganize their irrigation systems and obtain a more dependable water supply. Surveys by SCS engineers resulted in a group plan which included the construction of a 1,600 acre foot irrigation storage reservoir; 4,500 feet of irrigation canal; 40,000 feet of individual supply ditches; 1,100 feet of siphon to convey water across a canyon; land leveling; and numerous water and erosion control structures. Total construction costs of this project to landowners were approximately \$130,000. Supplemental irrigation water is now furnished for approximately 1,300 acres of irrigated land. This group action has resulted in efficient use of irrigation water, and has helped the individual farmers balance their farm units.

Thirty-five farmers in Stanislaus County, California, have participated in group irrigation facilities involving installation of 3.5 miles of concrete pipe benefiting a total of 1,501 acres and costing \$43,789. An important benefit to the general public was obtained by the alleviation of mosquito breeding areas. This is in a part of the State where mosquito-induced sleeping sickness (encephalitis) is prevalent.

Farmers and ranchers in Sheridan County, Wyoming, requested two districts and the SCS to rebuild and enlarge the 50-year old reservoir in the Big Horn mountains. Surveys and designs by SCS resulted in increased capacity from 1,800 acre feet to 6,000 acre feet by use of a new dam. The improvements cost \$225,000 plus \$12,000 for roads. The group arranged for financing by means of a loan from the Farmers Home Administration, ACP cost-sharing and use of their own resources.

Plant Materials Centers

The Service has eighteen plant materials centers located so as to serve the major plant growth regions. Native and introduced seed and plants from foreign accessions and from various plant breeders are assembled at these centers. Promising plants are tested to determine their range of climatic and soil adaptations for solving urgent conservation problems. Those showing promise at the centers are further tested on farms of soil conservation district cooperators on a field basis to determine their fitness under farming conditions. If the new plants meet the requirements for which they are being tested, the seed is made available to district cooperators and cooperating Crop Improvement Association members to be increased for the commercial market.

The work at the Plant Materials Centers is carried on in cooperation with the State Experiment Stations and other local agencies. Cooperative relations activities with the American Seed Trade Association and the Association of American Nurserymen have continued at the national and regional levels over the years. Thirteen of the eighteen centers are operated by the SCS, and five by cooperating State agencies, as follows:

Operated by SCS

Tucson, Arizona	Coffeetown, Mississippi
Pleasanton, California	Elsberry, Missouri
Arcadia, Florida	Bridger, Montana
Kahului, Hawaii	Big Flats, New York
Aberdeen, Idaho	Corvallis, Oregon
Beltsville, Maryland	Pullman, Washington
East Lansing, Michigan	

Operated by Cooperating Agencies

Americus, Georgia (University of Georgia)
Manhattan, Kansas (Kansas State University)
Las Lunas, New Mexico (New Mexico State University)
Bismarck, North Dakota (North Dakota Association of SCD)
Spur, Texas (Texas A. & M.)

New Plants for Soil and Water Conservation

The National Plant Materials Center at Beltsville has filled 750 requests for packets of seed from 27 foreign countries and has received about the same number of seed packets from 50 foreign countries. Examples of recent selections at Beltsville include a strain of Bermuda grass named "Tuffy" which has superior performance under heavy traffic and is scheduled for release by the SCS and Maryland University in 1963; and American beachgrass is being grown for the study and selection of superior types for stabilizing sand dunes along the East Coast.

In the Northeast: Seedling production of autumn olive, a superior and popular wildlife shrub, was greatly stimulated by supplying initial amounts of seed to four selected commercial nurseries. It is estimated that this will boost the production for 1962 by 350,000 seedlings. Also, the cheming strain of crown vetch was certified by the New York Crop Improvement Association. The initial amount of seed supplied to the Association will plant 33 acres of certified seed which will provide the base for producing some 10,000 pounds of certified seed a year.

In the Southeast: Many new legumes and grasses continue to show outstanding qualities for soil and water conservation. Two strains of Arrowleaf clover, one for early and the other for midseason use, were released cooperatively by the Georgia Agricultural Experiment Station. Another Arrowleaf clover does well in Mississippi wet lands where other legumes fail. A selection of buffel grass is performing well on grassland sites in Puerto Rico.

In the Cornbelt: Brome is accepted and approved by the University of Kentucky as a cover crop on the basis of a large number of field tests. Garrison creeping foxtail, a recent introduction from the Black Sea and increased in the Great Plains, shows promise on wet lands in Kentucky. The use of crown vetch for ground cover on steep slopes and for grazing is increasing.

In the Great Plains: An ecotype of Western wheatgrass adapted to West Kansas conditions has been extensively tested and is now increased commercially for wide scale use. After 15 years of testing, a winter hardy strain of arbor vitae from Rochester, New York is grown in two large commercial nurseries in Kansas and Nebraska for use in shelterbelts.

In the West: Initial tests at the Aberdeen Plant Materials Center indicate that an accession of field brome furnished forage throughout the growing season. Seed is now available for field plantings. Two new wheatgrasses provide effective ground cover on saline soils in low rainfall section of Nevada. Only 3-1/2 acre inches are required to maintain ground cover after the first growing season. Lana vetch, in addition to producing abundant forage in the foothills of California, produces large seed crops that are sought avidly by doves.

Status of Soil and Water Conservation Needs Inventory

Eight agencies of the Department of Agriculture participated in developing the National Inventory of Soil and Water Conservation Needs. Work on the Inventory was started county by county in 1956. Field work was completed in 1960 and statistical summaries made in 1961.

The first National report, entitled "Agricultural Land Resources," A.I.B. 263, was published in digest form for the White House Conference on Conservation, May 19 and 20, 1962. "Basic Statistics of the National Inventory of Soil and Water Conservation Needs," Statistical Bulletin 317, was published in August 1962. A third report, being prepared during fiscal year 1963, will be an interpretation and critical evaluation of data contained in the previous volume.

Inventory reports for two-two States and Puerto Rico have been published as follows: Alabama, Arkansas, California, Colorado, Georgia, Kansas, Louisiana, Maine, Massachusetts, Missouri, Montana, New Hampshire, North Carolina, North Dakota, Ohio, Pennsylvania, South Carolina, South Dakota, Virginia, Washington, West Virginia, and Hawaii. Several other States are in the process of publishing their reports. Many of the county reports have also been published.

Examples of special uses of the Inventory are as follows:

1. The U.S. Hydrograph Laboratory of the Department's Soil and Water Conservation Research Division at Beltsville has micro-filmed the flood plain estimates shown in the watershed portion of the Inventory to use as parameters in hydraulic computations. The Department of Geography, University of Chicago, also having interest in these same data, is cooperating with the Hydraulic Laboratory in arriving at potentials of use of these data.
2. Resources For The Future is developing from basic Inventory data a quantitative assessment of our land resource base to show various geographic patterns and relationships, along with regional differences. This work will result in a series of maps and interpretations.
3. Land and farm economic evaluations are being made by river commissions, Corps of Engineers, and the Economic Research Service on some areas as large as river basins. Data from the soil survey sample areas including kinds of soil, slope, erosion, and land use are being used extensively. Crop production information will be estimated from the same sample area data county by county.

Arrangements are being made to keep current the data on soil and water conservation needs. It is anticipated that a number of Department agencies as well as others will cooperate and continue in this effort.

Benefits of Conservation Farming

Conservation farmers have a personal and financial interest in the protection and improvement of their land and water resources. They use different combinations of conservation practices in various ways to protect or rebuild the top soil, and to conserve water. District cooperators in all parts of the country have found effective ways of conserving their soil while using it to produce higher levels of farm income. They have converted nonproductive lands to beneficial uses and have found increased profits in doing so. The following examples reflect some income-producing aspects of land treatments:

Seven families of Henpeck Hollow, Wisconsin, changed their wasting soil and water resources to a demonstration area of modern, efficient, and prosperous farming, through the Richland County Soil Conservation District. They received technical assistance from SCS in making conservation plans for their land. The results demonstrated the value of soil and water conservation. Pasture renovation meant a \$500 increase in milk production for one of the farmers. Bottom fields, once flooded periodically, now yield a dependable 100 bushels per acre of corn. Another landowner used his conservation plan to build higher producing Holsteins, averaging 400 pounds of butterfat per cow for the past several years.

A cooperator of the Daviess County Soil Conservation District, Kentucky, today has an income-producing recreation center that started out with a need to improve an old farm pond. The Soil Conservation Service helped design and construct a new dam. Later this pond was enlarged to form a lake for swimming, and a fish pond was built. Then two other ponds were built and connected with canals for water skiing. A new hardwood floor in the barn, attic fans, bleachers, and a concession stand provided space for square dancing. About 50 acres of wooded area is used for hiking, picnicking, and hay rides. Shelters were constructed and hundreds of tables built throughout the area. This recreation area is now well known throughout Indiana, Kentucky, and Illinois.

When the Twin Falls Soil Conservation District, Idaho, was organized in 1951, irrigation water for its 140,000 acres of cropland was uncertain, and large areas of its 815,000 acres of rangeland were growing sagebrush and cheat grass. The Soil Conservation Service supplied the district with enough seed for trial planting of new and better range grasses. A year later, the first seed producer grazed 50 cows for 3 weeks on 40 acres planted to the new grasses and also harvested some seed. Before that, he said, 160 acres in that field would not carry one cow through the summer. Other ranchers in the district followed his example to expand their livestock with improved seed supplies. About 130,000 acres of rangeland have been seeded, increasing the value of the land from \$4 an acre to about \$20. Supplies of irrigation water are being conserved. A new seed-producing industry has also been thriving. There are now more than 75 seed growers in the Twin Falls district. They produce 1/2 million pounds of seed annually, bringing more than \$250,000.

With SCS assistance, a cooperator with the Whitman County Soil Conservation District in Washington, installed an irrigation system which enables him to use a rotation deferred system of grazing. He increased the number of top producing range sites more than 12 times, and established 145 acres of permanent summer irrigated pasture on a once barren, sandy river bar. The pasture development, range improvement, and management system gives him 67,000 more pounds of beef annually than in 1949, plus an additional 100 head of cows he now can run on the same acreage. This cooperator says: "Today we have one of the finest pasture stands you could ever hope for ... now I can run twice as many cows twice as easy as I could a dozen years ago."

An 11-acre farm pond, built with SCS assistance by a cooperator in Carroll County, Illinois, as a source of water for irrigation of a nursery and for livestock, now brings added income from recreation. The new income-producing facilities include fees for swimming, use of bath house, picnic

sites, boat rental, fishing, and for camping. Land which he owned across the road was donated to a local group and they are putting up a summer theater to hold approximately 300 people.

City people benefit also: Residents of Stamford, Connecticut now have a \$45,000 recreation center instead of a dump on what formerly was a 30-acre swamp. The idea--for a recreation area--came through the Fairfield County Soil Conservation District. SCS conservationists designed wildlife ponds and a drainage ditch to drop the water level slightly. The City Park Commission built three ponds and stocked them with fish. The people now use this area for fishing, skating, hiking, or relaxing.

In addition, many other types of soil and water conservation have paid large dividends for the investments made. Eroding gullies have been stabilized with vegetation and denuded hillsides grow green again. Improved methods of irrigation have increased the efficiency in uses of available water.

Applied land treatments cause rain water to soak into the ground rather than run away, thereby supplying more water for pumps and wells in local areas. In some places it has caused stagnant seeps to become flowing springs and muddy streams to flow clear again. All this is of much benefit to the consuming public, and future welfare of all the people as stated in the Department's objectives, mentioned earlier.

Conservation farming becomes a way of life for those who practice it in the manner described above. They curve their furrows on the contour around the hills; plant grasses where weeds grew before; watch tree seedlings grow tall; and tend their cattle with patient care. There is great personal satisfaction in these aesthetic values. Thousands of professional conservationists, and well over a million district cooperators are passing the multiple-benefits on to the next generation.

Land and Water Policy

The Soil Conservation Service has geared its policies and program operations to the objectives of the Department of Agriculture. A review of the Nation's land and water resource situation, along with Conservation Needs Inventory, has led to a series of departmental recommendations as follows:

1. -- to encourage land and water uses that will yield continuing maximum benefits to the people of the United States.
2. Adequate income for farmers should be an immediate and continuing objective.
3. The conservation of land and water resources should be carried on as one of the urgent and continuing needs of American agriculture.
4. Widespread and equitable distribution of income should be induced through encouragement of owner-operated family farms, forest holdings, and recreation enterprises.

5. Improve efficiency of farming, ranching, forestry, and recreation by continued adaptation of technology to family-type operations.
6. -- offer guidance to the type of land use and the pattern of rural residence to ensure community improvement, expansion, and development.
7. -- cooperate with State and local agencies in furnishing technical services and information to guide land and water use where urban expansion is occurring.
8. Increase efficiency of water use and promote water conservation by improving soil and water management and by adjusting institutional arrangements to promote efficiency and avoid waste.
9. -- increase efforts to reduce the harmful effects of water and air pollution, soil contamination, and pesticides and herbicides through research and application of improved technologies.
10. -- provide landowners with technical and financial assistance to develop, maintain, and improve the habitat for fish and wildlife on their lands and to develop recreational enterprises.
11. In formulating land and water programs, the Department should utilize all of its resources and authorities to assure optimum opportunities for people in rural areas.
12. Greater emphasis should be placed on participation in planning at local, State, and National levels to provide for the conservation and wise use of land and water resources.

In view of the needed land use adjustments likely over the next 20 years, desirable rates of adjustments and conservation measures to contribute to the above principles are being developed.

(b) Watershed Protection

Appropriation Act, 1963	\$60,585,000
Proposed supplemental, 1963, for increased pay costs	833,000
Base for 1964	<u>61,418,000</u>
Budget Estimate, 1964	63,992,000
Increase	<u>+2,574,000</u>

Note: The budget estimate for 1964 proposes an increase of \$2,574,000 above the base for 1964. The following justifications are presented on the basis of available funds, and the amounts for 1962 and 1963 reflect unobligated balances carried over from prior years. While this presentation reflects an estimated net decrease of \$2,336,769 in obligations in 1964, it is likely there will be some carryover of unobligated balances from 1963 to 1964. The extent to which there may be such carryover cannot be estimated at this time.

SUMMARY OF INCREASES AND DECREASES, 1964
(On the basis of available funds)

Decrease in installation of works of improvement in "pilot" watersheds .	-907,600
Decrease for installation of works of improvement in "P.L. 566" watersheds due to availability of balances in 1963 which are not reflected in the estimate for 1964	-3,109,534
Decrease for loans to local sponsoring organizations due to availability of balances in 1963 which are not reflected in the estimate for 1964	-421,235
Increase for cooperative surveys and investigations in additional river basins with other agencies	+1,451,100
Reduction to reflect estimated savings due to the installation of a centralized data processing operation (MODE) for personnel and payroll data	-60,000
For postal costs pursuant to Public Law 87-793	+18,000
For pay act costs pursuant to Public Law 87-793	+692,500
Net decrease	<u>-2,336,769</u>

PROJECT STATEMENT
(On the basis of available funds)

Project	1962	1963 (estimated)	Increase or Decrease		1964 (estimated)
			Increased Pay and Postal Costs: (P.L.87-793):	Other	
1. Small watershed project investigations and planning	\$5,443,207:	\$5,709,000:	+\$183,000	- -	\$5,892,000
2. Watershed works of improvement:					
(a) Pilot watersheds	2,520,228:	1,920,600:	+10,000	-\$907,600(1):	1,023,000
(b) P.L.566 water-sheds	39,172,740:	53,235,034:	+457,500	-3,169,534(2):	50,523,000
3. Loans and related expense	3,223,321:	3,421,235:	- -	-421,235(3):	3,000,000
4. River basin program: development and coordination	993,759:	2,042,900:	+60,000	:+1,451,100(4):	3,554,000
Subtotal a/	51,353,256:	66,328,769:	+710,500(5):	-3,047,269	63,992,000

Project	1962	1963 (estimated)	Increase or Decrease		1964 (estimated)
			Increased	Pay and Other	
			Postal Costs:		
			(P.L. 87-793):		
Unobligated balance brought forward	-2,512,335:	-4,910,769:	- -	+4,910,769	- -
Unobligated balance carried forward	+4,910,769:	- -	- -	- -	- -
Total increased costs (P.L. 87-793):					
Pay costs	(- -)	(833,000)	(+692,500)	(+48,500)	(1,574,000)
Postal costs	(- -)	(- -)	(48,000)	(- -)	(18,000)
Total available or estimate	53,751,690:	61,418,000:	+710,500	+1,863,500	63,992,000
Transferred to "Operating expenses, Public Buildings Service, General Services Administration"	+35,311:	- -			
Proposed supplemental for increased pay costs	- -	-833,000:			
Total appropriation or estimate	53,787,000:	60,585,000:			

a/ Represents obligations. Applied costs for 1962 are \$40,849,078. The difference of \$10,504,178 reflects, primarily, the excess of project agreements and contracts signed obligating funds for construction over contractual work actually accomplished.

INCREASES AND DECREASES
(On the basis of available funds)

(1) A decrease of \$907,600 in the rate of installation of works of improvement in pilot watersheds.

Installation of works of improvement is expected to be completed during the current fiscal year in 4 of the 10 currently active pilot watershed projects. This will leave only 6 pilot projects in operation in the fiscal year 1964. The proposed reduction reflects the decreased needs in these projects due to project completions. It is estimated that \$896,000 will be sufficient for installation of works in the six operating projects and \$127,000 will be needed to continue project evaluation studies in about 12 projects.

(2) A net decrease of \$3,169,534 consisting of:

(a) A decrease of \$3,109,534 in the projected obligations for installation of works of improvement in P.L. 566 watershed projects due to availability of balances in 1963 from prior years with no reflection of carryover in the estimate for 1964.
The extent to which there may be such carryover cannot be estimated at this time.

By the end of the fiscal year 1963 it is estimated that a total of 505 Public Law 566 watershed projects will have been approved for operations. Of this number 73 will have been completed and 10 will be inactive which will leave 422 prior year projects in an active status in 1964. Another 120 are expected to be approved in the fiscal year 1964 for a total of 552.

The 1964 budget estimate provides for continuing work in about 413 projects underway in 1963 and prior years at about the 1963 level. About 255 of these will be continuing construction from prior years of which 32 will be completed during the year. The budget also provides for furnishing advance engineering and technical assistance to 122 projects and for initiating construction on 36 projects approved in 1963 and prior years.

(b) A reduction of \$60,000 to reflect estimated savings due to the installation of a centralized data processing operation (MODE) for payroll and personnel data.

An explanation of this reduction is included in the Preface to these Explanatory Notes. The reduction has been reflected in total in the activity for installation of works of improvement in P.L. 566 watersheds.

(3) A decrease of \$421,235 in projected obligations for loans to local sponsoring organizations under Section 8 of Public Law 566, as amended, due to availability of balances in 1963 from prior years with no reflection of carryover in the estimate for 1964.

Estimated obligations of \$3,421,235 in 1963 includes a carryover of \$421,235 from 1962. The \$3,000,000 budget request for 1964 for loans to local sponsoring organizations under Section 8 of Public Law 566 is the same as the amount appropriated for this purpose in 1963. The estimated \$421,235 decrease in the rate of obligations in 1964 is based on the assumption that there will be less carryover of funds from 1963 to 1964 than there was from 1962 to 1963. The projected decrease does not foresee a smaller loan program and workload in 1964, but on the other hand, represents faster and more efficient loan processing and wider interest in the loan program in the fiscal year 1963.

(4) An increase of \$1,451,100 for cooperative surveys and investigations of the watersheds of rivers and other waterways.

The Senate Select Committee on National Water Resources has recommended that surveys and investigations be made of the river basins of the country by 1970. The increase requested for 1964 will enable the Department to effectively participate in an accelerated program.

This Department and the Departments of the Army, Interior, and Health, Education and Welfare, at the request of the Bureau of the Budget, have coordinated their river basin planning budget requests for the fiscal year 1964. This increase is proposed so this Department can participate with the other concerned Federal Departments in these cooperative river basin surveys to assure that the upstream and agricultural aspects of the surveys will be adequately considered.

Vigorous participation of the Department in river basin surveys is essential. Agricultural and other upstream interests are placed at a disadvantage when the Department does not participate with the Corps of Engineers and other Federal agencies in the river basin surveys which they may undertake. Without participation by the Department in such surveys, little consideration is given to water and related land resource problems and needs in upstream areas. Survey reports and development plans proposed as comprehensive plans by agencies such as the Corps of Engineers customarily are limited to large mainstream and principal tributary reservoirs and levees and to local protection works at larger population centers. Also, because of failure to adequately provide for consideration of upstream development opportunities, the best means of meeting downstream needs may not be employed. Major river developments which are planned without participation of the Department may have an adverse impact on agricultural developments, national forests, rural electrification and rural areas development. Such coordination cannot be truly effective without comprehensive cooperative river basin surveys.

River basin surveys provide information on the total needs for water use, management, and control in the basin and determine the coordinated water and related land resources improvements required to satisfy those needs. This makes for efficient resource development and minimizes conflicts. Cooperative river basin surveys and investigations provide for a determination of the need for upstream watershed projects for which the Department is responsible and their coordination with the downstream projects of other agencies for water resource use and development. River basin surveys simplify and make future planning of individual watershed projects less costly and time consuming.

The \$3,554,000 requested for the fiscal year 1964 would enable the Department to continue participation in inter-agency coordination activities of the Inter-Agency Committee on Water Resources, to maintain representation on the five river basin inter-agency committees, to initiate 8 additional surveys in the fiscal year 1964, to place 10 surveys initiated in the fiscal year 1963 on a full-year basis, and to continue 6 surveys initiated prior to the fiscal year 1963. Fourteen of the surveys will be with the Corps of Engineers and ten with State water resource agencies, as shown in the following table:

River Basin	States Involved	Cooperating Agency
Surveys initiated prior to Fiscal year 1963		
Arkansas Multiple Purpose Project	Ark., Okla.	Corps of Engineers
Humboldt River	Nevada	Nevada Dept. of Conservation and Natural Resources
Oregon Rivers	Oregon	Oregon State Water Resources Board
Pearl & Big Black Rivers	Miss., La.	Miss. Board of Water Commissioners and La. Dept. of Public Works
Sevier River	Utah	The State of Utah
Upper Colorado River	Colorado	Colo. Water Conservation Board

River Basin	States Involved	Cooperating Agency
<u>Surveys initiated in fiscal year 1963</u>		
Elkhorn & Big Blue Rivers	Nebraska	Nebr. Soil & Water Conservation Commission
Genesee River	New York	N.Y. Conservation Dept.
Florida West Coast Tribs.	Florida	Fla. Dept. of Water Resources
James River	South Dakota	S.D. State Water Res. Commission
Meramec River	Missouri	Corps of Engineers
Ohio River (Including the Wabash and Kanawha)	Pa., N.Y., W.Va., Va., Tenn., Ky., Ohio, Ind., Ill.	Corps of Engineers
Poteau River	Okla. & Ark.	Corps of Engineers
Red River	La., Ark., Okla., Texas	Corps of Engineers
Susquehanna River	N.Y., Pa., Md.	Corps of Engineers
Willamette River	Oregon	Oregon Water Resources Board
<u>Surveys to be initiated in Fiscal year 1964</u>		
Colorado River Basin	Wyo., Colo., N.M., Utah, Ariz., Nev., Calif.	Corps of Engineers
Connecticut River	Vt., N.H., Mass., Conn.	Corps of Engineers
East Texas River Basins	Tex., La.	Corps of Engineers
Grand & Fox Rivers	Mich., Wisc., Ill.	Corps of Engineers
Missouri River Basin	Colo., Iowa, Kans., Minn., Mo., Mont., Nebr., N.D., S.D., Wyo.	Corps of Engineers
Puget Sound Basin	Washington	Corps of Engineers
White River	Mo., Ark.	Corps of Engineers
Upper Mississippi River	Minn., Wisc., Iowa, Mo., Ill.	Corps of Engineers

(5) An increase of \$710,500 for pay and postal costs pursuant to Public Law 87-793, consisting of:

(a) An increase of \$692,500 for pay act costs. (An over-all explanation of increases for pay act costs is included in the Preface to these Explanatory Notes in Volume 1.)

(b) An increase of \$18,000 for additional postal costs pursuant to Public Law 87-793. (An over-all explanation of increases for postal costs is included in the Preface to these Explanatory Notes in Volume 1.)



STATUS OF PROGRAM

Current Activities: The Watershed Protection and Flood Prevention Act (Public Law 566, 83rd Congress), as amended (16 U.S.C. 1001-1008, 76 Stat. 608-610), provides for cooperation between the Federal Government and the States and their political subdivisions in a program to prevent erosion, floodwater, and sediment damages in the watersheds of rivers and streams and to further the conservation, development, utilization, and disposal of water. The work of the Department under this item consists of the following:

1. Investigations and surveys of proposed small watershed projects: upon application by local sponsoring organizations the Department works with them in the preparation of project work plans. These plans outline the soil and water management problems in the watershed, what is planned to be done to alleviate these problems, the works of improvement proposed, the estimated benefits and costs, the cost-sharing and operation and maintenance arrangements, and other facts necessary to justify Federal participation in developing the project.
2. Technical and financial assistance in the installation of works of improvement specified in approved watershed work plans:
 - a. Structural measures: This work includes the installation of structural measures for flood prevention and water management such as floodwater retarding structures, stream channel improvements, stabilizing and sediment control structures, irrigation reservoirs and canals, etc. Detailed construction plans, designs, and specifications are prepared for these measures by the Department, or by engineers employed by the local organization. The Federal Government bears all of the construction cost of structural measures for flood prevention and an equitable part of the cost of installing works of improvement for agricultural water management and for fish and wildlife or recreational development including minimum basic facilities for public health and safety and access to the area. Local organizations must pay all cost of works of improvement for other purposes. In addition local organizations must acquire water rights and furnish land, easements, and rights-of-way for all structural measures except that the Federal Government may pay up to one-half the cost of land, easements, and rights-of-way allocated to fish and wildlife and recreational development. Local organizations must also administer all construction contracts and operate and maintain the completed works of improvement.

Advances may be made to local sponsoring organizations from construction funds to provide for immediate acquisition of easements and rights-of-way to prevent encroachment by other developments; and for additional storage of water to meet anticipated future demands for municipal and industrial uses, but not to exceed 30 percent of the total estimated cost of such a structure. In each case, advances must be repaid with interest. Advances for preservation of structure sites must be repaid before construction starts for credit to construction funds.

Funds are provided to local organizations under project agreement for installation of authorized works of improvement on other than Federal lands. Federal agencies carry out the watershed program on Federal lands which they administer.

Engineering assistance is provided for flood prevention, agricultural water management, and for water resource improvements for fish and wildlife and recreational purposes, either directly by the Federal Government or by the local organizations with reimbursement from the Federal Government. The Department may also supply up to one-half the cost of engineering assistance required in connection with installation of minimum basic facilities for fish and wildlife and recreational developments.

b. Land treatment measures: Proper land use and treatment is a basic requirement of a watershed project. The Department furnishes farmers and ranchers the technical assistance needed to speed up the installation of land treatment measures to achieve project objectives. This assistance may be furnished to supplement that being received under other conservation programs to the extent that the latter falls short of meeting project objectives.

Certain types of land treatment measures are required to be installed under this program to achieve justified off-site flood prevention benefits. Such measures provide little or no benefit, or such long deferred benefits to the landowner that he cannot be expected to bear the entire installation cost. The costs of applying such measures may be paid for in part by the Department under authority of Section 3 of the Watershed Protection and Flood Prevention Act. The rate of financial assistance on such special measures may not exceed the rate of assistance for similar practices under other conservation programs of the Department. Measures currently eligible for financial assistance include those for intensified fire prevention, stabilization of critical areas, minor gully, streambank, and grade stabilization structures, and other on-farm measures which may be used in lieu of downstream flood prevention structures. This work is accomplished through project agreements with local sponsoring organizations who arrange for and accomplish the work by contract or force account. Payments are made by the Federal Government to the local sponsoring organizations as the land treatment measures are installed.

3. Installation of works of improvement in 10 currently active "pilot" watersheds out of the 62 originally authorized by the Congress under authority of the Act of April 27, 1935 (16 U.S.C. 590a-f) to serve as demonstrations of the effectiveness of complete watershed treatment in preventing erosion and reducing floodwater and sediment damage.
4. Program evaluation studies in selected watershed projects to determine the effectiveness of structural and land treatment measures.
5. Surveys and investigations of watersheds of rivers and other waterways in cooperation with other Federal, State, and local agencies, as the basis for development of coordinated water and related land resources programs.

6. The making of loans to local organizations to finance the local share of the costs of installing planned works of improvement for flood prevention, and for the conservation, development, utilization and disposal of water, including fish and wildlife and recreational developments and municipal and industrial water supplies for present use and future needs. Repayment with interest is required within 50 years after the principal benefits of improvements first become available.

Program Assignments

The Soil Conservation Service has general responsibility for administration of the work of the Department authorized under the Watershed Protection and Flood Prevention Act and for the formulation of guiding principles and procedures. It assists local organizations with (a) the development of watershed work plans, and (b) the installation of land treatment measures and structural works of improvement on non-Federal land in authorized watersheds. Some works of improvement are also installed on Federal lands by arrangement with the administering agency. It also makes surveys and investigations of the watersheds of rivers and other waterways and cooperates with other agencies in the planning, development, and coordination of works and programs.

The Forest Service participates in the development of watershed work plans and in the installation of watershed improvement measures. It concerns itself with (a) all national forest and other lands in the authorized watersheds that are administered by the Forest Service, and (b) certain specialized technical assistance on other forest lands in the watersheds. It also provides specialized assistance in forestry aspects of coordinated river basin programs.

The Bureau of Land Management and the Bureau of Indian Affairs of the Department of the Interior participate in the planning and installation of works of improvement on lands under their jurisdiction. The Economic Research Service of the Department of Agriculture assists with the development of criteria to be used in the economic evaluation of work plans and measures installed in watershed projects. It also makes special economic analyses of specific watershed projects and of river basin resource development proposals. The Farmers Home Administration has responsibility for administration of Sections 4 and 8 of the Act as they relate to loans or advancements to local organizations.

Funds are made available from this appropriation to the U. S. Weather Bureau and the U. S. Geological Survey, either by transfer or reimbursement, for precipitation and runoff data needed in watershed program evaluation, planning, and design work.

Selected Examples of Recent Progress:

INVESTIGATIONS AND PLANNING

Agency Participation

The following table shows funds obligated for investigations and planning watershed protection projects in 1962 and estimates for 1963 and 1964 by agency:

Agency	: 1962 : : Obligations :	: 1963 : : Estimate :	: 1964 : : Estimate :
Soil Conservation Service	: a/ \$5,056,861 :	\$5,276,000 :	\$5,446,100
Economic Research Service	: 19,614 :	26,000 :	26,900
Forest Service	: 366,732 :	407,000 :	419,000
Total	: 5,443,207 :	5,709,000 :	5,892,000

a/ Includes \$863 for reimbursable work performed by the U. S. Geological Survey.

Development of Watershed Work Plans

During the fiscal year 1962, the Department received 197 State approved applications from local sponsors for assistance in planning and carrying out works of improvement in small watersheds. (The number of applications received for the last 6 years has averaged 193 per year.) This brought the total number of applications received from local organizations to 1,702 as of June 30, 1962. These applications covered 121,186,300 acres in 48 States and Puerto Rico. During the fiscal year 1962 an additional 110 applications were approved for planning assistance which brought to 769 the total number that had been approved for planning since the inception of the Watershed Protection Program. Watershed work plans had been completed on 452 of these watersheds as of June 30, 1962. As of that time also, planning had been suspended or terminated on a total of 127 watersheds for which work plans had been partially completed. The suspensions and terminations were at the request of the local sponsoring organizations or with their concurrence when it became evident that benefit-cost ratios would prove unfavorable.

As of June 30, 1962, no watershed planning assistance had been initiated on 933 of the applications received from local sponsoring organizations. It is estimated that 683 of the watersheds covered by these applications will be determined as suitable for the development of project work plans and that 250 will not qualify for assistance under present criteria.

Over \$1,485,000 was appropriated by legislatures in 20 States, or otherwise provided through official facilities of the State governments, to supplement the watershed planning activity in the fiscal year 1962 through trust fund agreements, reimbursements, State controlled watershed planning parties, and personnel provided by the States to supplement Service planning staffs. For the fiscal year 1963 such State assistance for watershed planning will amount

to about \$1,590,000. The Department makes no commitment that additional funds will be allotted to these States for watershed installations by reason of the fact that additional watershed work plans are being prepared with non-Federal funds and services.

The following table shows the number of applications received for planning assistance and progress made in planning and installation of works of improvement:

Status of Applications for Watershed Planning

Activity	: 1962 : : Actual :	: 1963 : : Estimate :	: 1964 : : Estimate :
Applications:	:	:	:
Received, current fiscal year	: 197 :	: 220 :	: 230 :
Received, cumulative at June 30	: 1,702 :	: 1,922 :	: 2,152 :
Not suitable for planning at June 30 .	: 250 :	: 260 :	: 260 :
Planning:	:	:	:
Authorized, current fiscal year	: 110 :	: 125 :	: 125 :
Authorized, cumulative at June 30	: 769 :	: 894 :	: 1,019 :
Suspended or terminated at June 30 ...	: 127 :	: 130 :	: 135 :
Completed, current fiscal year	: 78 :	: 110 :	: 110 :
Completed, cumulative at June 30	: 452 :	: 562 :	: 672 :
In process at June 30	: 190 :	: 202 :	: 212 :
Remaining to be planned at June 30 ...	: 683 :	: 768 :	: 873 :
Not yet approved for operations	: 67 :	: 57 :	: 47 :
Operations:	:	:	:
Approved, current fiscal year	: 73 :	: 120 :	: 120 :
Approved, cumulative at June 30	: 385 :	: 505 :	: 625 :
Completed, current fiscal year	: 21 :	: 29 :	: 32 :
Completed, cumulative at June 30	: 44 :	: 73 :	: 105 :
In process at June 30	: 341 :	: 432 :	: 520 :

INSTALLATION OF WORKS OF IMPROVEMENT

Agency Participation

The following table shows funds obligated for installation of watershed works of improvement for 1962 and estimates for 1963 and 1964 under allotments and allocations to cooperating agencies of the Department of Agriculture and Department of the Interior.

Agency	1962 Obligations	1963 Estimate	1964 Estimate
Soil Conservation Service:			
Pilot Watersheds	\$2,462,202 a/	\$1,874,100	\$987,900
P.L. 566 Watersheds	38,599,580 b/	52,134,704	49,421,300
Economic Research Service:			
Pilot Watersheds	38,247	30,100	31,100
P.L. 566 Watersheds	56,880	63,300	65,700
Forest Service:			
Pilot Watersheds	19,779	16,400	4,000
P.L. 566 Watersheds	384,075	902,500	909,000
Bureau of Indian Affairs:			
P.L. 566 Watersheds	22,800	17,900	20,000
Bureau of Land Management:			
P.L. 566 Watersheds	17,180	6,900	7,000
U. S. Geological Survey:			
P.L. 566 Watersheds	92,227	109,730	100,000
Total, Pilot Watersheds	2,520,228	1,920,600	1,023,000
Total, P.L. 566 Watersheds	39,172,740	53,235,034	50,523,000
Grand total	41,692,968	55,155,634	51,546,000

a/ Includes \$60,852 for reimbursable work performed by the U. S. Geological Survey, \$6,133 for U. S. Weather Bureau, and \$2,855 for Agricultural Research Service for project evaluation studies in 1962.

b/ Includes \$87,230 for reimbursable work performed by the U. S. Weather Bureau and \$9,033 for the U. S. Geological Survey in 1962.

Status of Pilot Demonstration Watersheds

Sixty-two "pilot" watersheds were started in the fiscal year 1954 in cooperation with local sponsors under authority of the Act of April 27, 1935 (16 U.S.C. 590a-f). These were to demonstrate and evaluate the effectiveness of installing works of improvement in small watersheds for watershed protection and flood prevention. As of June 30, 1962, work had been discontinued in eight projects and completed as planned in 44 except for project evaluation studies which will be underway until 1970 in some of these. The total Federal cost of the pilot projects, including the eight that were discontinued before completion at the request of the local sponsors, is currently estimated at \$43.0 million, excluding the cost of project evaluation studies subsequent to the fiscal year 1959, which is estimated at \$1,384,773.

The following table shows the current status of the "pilot" watershed projects. Obligations for project evaluation studies are not reflected in the table subsequent to the fiscal year 1959 as these costs were determined not properly allocable to the individual projects.

Explanation	: 1962 Actual		: 1963 Estimate		: 1964 Estimate	
	: Amount		: Amount		: Amount	
	: Num- : ber	: (Thou- : sands)	: Num- : ber	: (Thou- : sands)	: Num- : ber	: (Thou- : sands)
Uncompleted projects at beginning of year and estimated completion cost	: 16	: \$5,917	: 10	: \$3,541	: 6	: \$1,748
Status of projects and amounts obligated:						
1. Projects completed during the year	: 6	: 225	: 4	: 348	: 2	: 295
2. Continuing prior year projects	: 10	: 2,151	: 6	: 1,445	: 4	: 601
Total	: 16	: 2,376	: 10	: 1,793	: 6	: 896
3. Uncompleted projects at end of year:						
(a) Obligations to date a/ ..	: 10	: 15,172	: 6	: 13,867	: 4	: 9,218
(b) Estimated completion cost	: 10	: 3,541	: 6	: 1,748	: 4	: 852
4. Projects completed (cumulative) and total cost a/ ...	: 44	: 23,939	: 48	: 27,037	: 50	: 32,582
5. Projects discontinued (cumulative) and total cost	: 8	: 330	: 8	: 330	: 8	: 330

a/ Includes obligations for project evaluation studies prior to the fiscal year 1960 on all projects on which these studies were carried out.

Installation of works of improvement was completed in six "pilot" watersheds in the fiscal year 1962. The Department expects to complete an additional four in 1963. Current schedules and cost estimates provide for continuing work in 6 projects remaining in operation in the fiscal year 1964 with two of these scheduled for completion in that year. These 6 projects are:

Calleguas Creek, California
Walnut Creek, California*
Chippewa River Tribs., Minn.

Upper Salt-Swedeburg Tribs., Nebraska
Third Creek, North Carolina*
Cow Bayou, Texas

*Scheduled for completion in the fiscal year 1964.

Project Evaluation Studies on Pilot Watersheds

Some evaluation studies have been carried out in all of the pilot watershed projects in which works of improvement were installed. As of June 30, 1962, out of a total of \$39,970,564 obligated for the pilot watershed program, \$1,794,227 was for project evaluation studies. It is estimated that \$128,000 will be required to continue these studies in the fiscal year 1963 and \$127,000 will be needed in the 1964 fiscal year.

It has been determined that these studies should be continued at least through the fiscal year 1970 in about 12 key projects. The continuation of these studies is necessary to obtain data over a sufficient period of time to provide a reliable long range appraisal of the effectiveness of works of improvement installed under the Watershed Protection program. Trap efficiency studies are also being made in 11 projects to determine water and sediment outflow from reservoirs to secure data to improve design of watershed structures. The estimated cost of continuing project evaluation studies after the fiscal year 1963 and through the fiscal year 1970 in the 12 selected projects is about \$727,000. This would bring the estimated total cost of evaluating the effectiveness of work done in the pilot projects to about \$2,650,000 or 6.0% of the total cost of the pilot watershed protection program.

Progress in Installation of Works of Improvement
in "Pilot" Watershed Projects by States

The following tabulation shows by State descriptive information concerning the extent of the program and rate of progress in obligating funds for the installation of works of improvement in the pilot watersheds:

State	Number Projects Approved	Total Watershed Area (Acres)	Total Estimated Federal Cost	% Federal Cost to Total Cost	Total Cumulative Federal Obligations to 6/30/62	% Federal Cost Obligated as of 6/30/62
Arizona	1	59,136	\$213,507	49.5	\$213,507	100.0
Arkansas	1	164,627	2,298,932	53.6	2,150,732	93.6
California	3 <u>a/</u>	332,815	8,368,829	47.2	7,156,114	85.5
Colorado	1	75,560	989,222	77.6	989,222	100.0
Georgia	1	40,598	1,050,195	65.7	1,050,195	100.0
Idaho	1 <u>a/</u>	42,880	101,759	80.5	101,759	100.0
Illinois	3 <u>a/</u>	100,885	1,279,245	76.4	1,279,245	100.0
Indiana	1	36,632	161,824	55.5	161,824	100.0
Iowa	3	31,673	742,237	61.3	742,237	100.0
Kansas	6 <u>a/</u>	83,354	1,386,630	62.9	1,377,092	99.3
Kentucky	4	87,665	1,759,526	59.5	1,759,526	100.0
Minnesota	2	606,488	3,148,403	56.6	2,928,015	93.0
Missouri	2	22,961	885,631	68.1	868,939	98.1
Montana	1 <u>a/</u>	--	8,622	100.0	8,622	100.0
Nebraska	4	212,884	3,626,765	66.3	3,256,689	89.8
New Hampshire ..	1	30,555	52,466	51.5	52,466	100.0
New Jersey	1	69,120	830,322	69.0	830,322	100.0
New Mexico	2	265,350	792,843	67.7	792,843	100.0
New York	4 <u>a/</u>	77,269	933,618	77.4	933,618	100.0
North Carolina ..	1	66,167	1,003,292	53.0	643,780	64.2
North Dakota ...	1	295,575	3,103,660	77.6	3,103,660	100.0
Ohio	2 <u>a/</u>	59,460	1,753,445	81.4	1,753,445	100.0
Oklahoma	1	30,894	407,545	58.9	402,645	98.8
Pennsylvania ...	1	15,425	65,153	36.0	65,153	100.0
South Carolina ..	1	67,346	1,233,674	60.3	935,823	75.9
South Dakota ...	1	2,900	134,312	81.1	134,312	100.0
Tennessee	1	14,900	628,476	64.5	586,826	93.4
Texas	4	274,770	4,316,384	63.4	3,456,839	80.1
Utah	2	48,482	585,157	76.6	585,157	100.0
Virginia	1	42,706	283,647	59.0	283,647	100.0
Washington	2 <u>a/</u>	53,080	344,042	98.3	344,042	100.0
West Virginia ..	1	5,325	346,958	80.9	346,958	100.0
Wisconsin	1	5,800	145,943	79.9	145,943	100.0
Subtotal	62	3,323,282	42,982,264	60.6	39,441,197	91.8
Project evaluation studies <u>b/</u>			1,384,773		529,367	
Total obligations			44,367,037		39,970,564	

a/ Includes one project which was discontinued before completion at the request of the sponsors.

b/ Obligations for evaluation studies subsequent to 6/30/59. Prior to the fiscal year 1960 all evaluation costs were charged to projects.

Status of Public Law 566 Watersheds

After watershed work plans have been completed by sponsoring local organizations with the Department's assistance and the work plans have been approved by the Department or the Congress as suitable for Federal participation, technical and financial assistance is provided for installation of the works of improvement specified in the work plan. On non-Federal lands local sponsoring organizations provide land, easements, and rights-of-way for planned structural measures; contract for construction work; operate and maintain the completed structural measures; and in the case of multiple-purpose structures, bear a share of construction costs. Federal agencies do this work on Federal lands which they administer.

Advance engineering and technical assistance is furnished to all approved projects before they are advanced to the construction stage. During the advance engineering and technical assistance stage, surveys and investigations are made and detailed designs, specifications, and engineering cost estimates are prepared for construction of structural measures. Areas are delineated where easements are required and technical assistance is furnished to operators and landowners to accelerate planning and application of land treatment measures.

The project construction stage begins with the execution of the first project agreement for construction of works of improvement. This does not occur until after required easements are obtained or assured and the sponsoring local organization has met all other requirements. Under a project agreement the local sponsoring organization agrees to construct a segment of the project which may consist of an individual or interrelated group of structures. The project agreement obligates the government to furnish its share of construction costs. Payments are made to the contracting local organization in accordance with the project agreement as the work progresses. Engineering and other services are provided for the preparation of contracts and inspection of construction. Technical assistance in planning and installing land treatment measures is continued.

In the fiscal year 1962, 73 projects were approved for operations and 65 projects were moved into the construction stage. This brought to 385 the total number of projects approved for operations as of June 30, 1962. Twenty-three of these projects were completed prior to 1962. Of those remaining 101 were receiving advance engineering and technical assistance only and 245 were under construction in 1962. Twenty-one of the latter were completed in 1962. Sixteen of the approved projects did not require Federal funds during the fiscal year 1962 because of approval late in the fiscal year or having no work scheduled for that year.

The following tabulation shows the status of Public Law 566 projects and amounts obligated or estimated to be obligated. The table does not reflect minor obligations for project evaluation studies (\$51,134 cumulative as of 6/30/62), or for balances remaining in the undistributed equipment account (\$390,866 cumulative to 6/30/62) which have not been distributed to projects.

Explanation	: 1962 Actual		: 1963 Estimate		: 1964 Estimate	
	: Amount		: Amount		: Amount	
	: Num- (Thou-		: Num- (Thou-		: Num- (Thou-	
	: ber : sands)		: ber : sands)		: ber : sands)	
1. Projects approved for operations and estimated completion cost:	:	:	:	:	:	:
(a) Uncompleted projects at beginning of year	:	:	:	:	:	:
(b) Projects approved during year	289:	\$188,775	341:	\$221,323	432:	\$288,087
Total	73:	71,930	120:	120,000	120:	120,000
	362:	260,705	461:	341,323	552:	408,087
2. Status of projects and amounts obligated:	:	:	:	:	:	:
(a) Projects for which no funds are available	--:	--	--:	--	129:	--
(b) Projects not requiring funds during year	16:	--	10:	--	10:	--
(c) Projects receiving advance engineering and technical assistance only	101:	2,442	167:	4,095	122:	3,407
(d) Projects moved into construction stage during year .	65:	14,494	60:	15,289	36:	10,164
(e) Prior year projects continuing under construction ..	159:	22,177	195:	33,235	223:	36,302
(f) Projects completed during year	21:	116	29:	617	32:	650
Total	362:	39,229	461:	53,236	552:	50,523
3. Uncompleted projects (cumulative) at end of year:	:	:	:	:	:	:
(a) Obligations to date	341:	106,103	432:	147,973	520:	184,096
(b) Estimated completion cost ...	341:	221,323	432:	288,087	520:	357,564
4. Projects completed (cumulative) and total cost	44:	10,226	73:	21,592	105:	35,992

Progress in Installation of Works of Improvement
in P.L. 566 Watershed Projects by State

The following tabulation shows by State descriptive information concerning the extent of the program and rate of progress in obligating funds for the installation of works of improvement in P.L. 566 watersheds. Opposite the listing of the State there is shown information concerning projects wholly within a State. Footnotes a/ and b/ indicate interstate projects. Only the applicable portion of an interstate project is included in a State.

State	Number : Projects : Approved : 6/30/62	Total : Watershed : Area : (Acres)	Total : Estimated : Federal : Cost	% : Federal : Cost to : Total : Cost	Total : Cumulative : Federal : Obligations : to 6/30/62	% : Federal : Cost : as of : 6/30/62
Alabama	9	405,751	\$5,906,222	55.6	\$1,777,281	30.1
<u>a/</u>	2	191,548	1,781,483	62.8	243,973	13.7
<u>b/</u>	(1)	6,000	159,556	60.9	19,447	12.2
Total, Ala.	11	603,299	7,847,261	57.2	2,040,701	26.0
Arizona	2	223,778	6,214,405	87.9	1,753,095	28.2
Arkansas	14	672,058	11,077,603	59.1	3,384,928	30.6
California	8	562,990	30,159,563	67.1	6,398,101	21.2
Colorado	7	465,966	3,413,266	71.5	2,353,189	68.9
Connecticut	3	52,686	5,575,234	53.9	778,382	14.0
<u>a/</u>	2	52,274	1,470,069	59.6	1,045,705	71.1
Total, Conn. ...	5	104,960	7,045,303	55.0	1,824,087	25.9
Delaware	2	124,298	2,461,322	48.8	779,684	31.7
Florida	7	434,730	4,231,302	43.8	1,204,793	28.5
<u>a/</u>	1	55,600	164,178	44.0	140,245	85.4
Total, Fla.	8	490,330	4,395,480	43.8	1,345,038	30.6
Georgia	18	863,891	9,633,059	55.6	4,775,720	49.6
<u>a/</u>	1	36,693	274,316	59.8	19,099	7.0
<u>b/</u>	(2)	9,266	7,732	15.0	2,989	38.6
Total, Ga.	19	909,850	9,915,107	55.6	4,797,808	48.4
Hawaii	2	30,760	5,420,600	70.0	577,815	10.6
Idaho	2	34,800	420,244	90.6	265,444	63.2
<u>a/</u>	1	126,720	323,160	34.6	23,543	7.3
Total, Idaho ..	3	161,520	743,404	53.2	288,987	38.9
Illinois	6	252,666	3,008,979	39.7	1,182,834	39.3
Indiana	7	428,156	6,715,770	62.4	2,546,066	37.9
Iowa	15	251,791	9,384,453	78.4	1,899,673	20.2
Kansas	10	590,614	13,770,170	77.6	2,589,363	18.8
Kentucky	15	1,278,437	18,027,524	48.4	3,933,008	21.6
<u>a/</u>	1	189,019	1,316,430	34.4	137,334	10.4
<u>b/</u>	(1)	7,807	19,715	23.7	4,070	20.6
Total, Ky.	16	1,475,263	19,363,669	46.7	4,074,412	21.0
Louisiana	8	607,309	5,090,407	37.6	2,629,590	51.6
Maryland	5	101,027	2,394,149	62.9	1,139,134	47.6

Progress in Installation of Works of Improvement
in P.L. 566 Watershed Projects by States - Continued

State	Number : Projects : Approved : 6/30/62	Total : Watershed : Area : (Acres)	Total : Estimated : Federal : Cost	% : Federal : Cost : to Total : Cost	Total : Cumulative : Federal : Obligations : to 6/30/62	% : Federal : Cost : Obligated : as of : 6/30/62
Massachusetts	3	256,624	1,459,284	63.2	720,384	49.4
b/	(2)	10,600	133,712	60.2	99,577	74.5
Total, Mass. ..	3	267,224	1,592,996	62.9	819,961	51.5
Michigan	5	226,595	2,675,941	31.3	462,348	17.3
Minnesota	4	230,184	894,534	38.9	179,358	20.0
Mississippi	12	448,582	8,719,899	58.0	2,969,330	34.0
a/	1	67,060	1,707,868	66.4	358,344	21.0
b/	(2)	13,920	338,032	68.5	73,288	21.7
Total, Miss. ..	13	529,562	10,765,799	59.5	3,400,962	31.6
Missouri	5	157,338	3,466,264	52.7	1,186,666	34.2
a/	1	52,084	365,272	62.1	264,942	72.5
Total, Mo.	6	209,422	3,831,536	53.4	1,451,608	37.9
Montana	1	71,200	371,081	42.8	348,993	94.0
Nebraska	12	636,398	11,280,609	56.8	1,657,459	14.7
Nevada	2	181,300	1,094,188	75.5	983,815	89.9
New Hampshire	3	132,100	1,365,107	67.5	514,082	37.6
New Jersey	6	161,434	1,670,834	65.9	1,057,136	63.3
New Mexico	14	698,421	4,172,267	80.7	3,476,183	83.3
New York	5	438,537	4,722,707	59.0	1,287,414	27.3
North Carolina	17	651,570	7,586,764	51.5	2,781,976	36.7
North Dakota	4	751,750	3,145,060	54.6	1,264,387	40.2
a/	3	251,597	703,976	50.8	449,843	63.9
Total, N. D. ..	7	1,003,347	3,849,036	53.8	1,714,230	44.5
Ohio	3	220,866	3,362,886	63.2	934,519	27.8
Oklahoma	20	2,251,499	31,869,493	56.4	14,511,940	45.5
Oregon	5	95,086	3,647,244	60.9	1,892,555	51.9
Pennsylvania	10	250,011	9,164,723	80.4	2,690,985	29.4
South Carolina	6	156,266	2,056,136	58.9	1,022,359	49.7
South Dakota	6	227,287	2,936,069	57.6	584,223	19.9
b/	(2)	105,927	914,177	64.4	739,156	80.8
Total, S. D. ..	6	333,214	3,850,246	59.1	1,323,379	34.4
Tennessee	12	439,996	13,695,117	74.2	3,848,051	28.1
a/	3	127,533	3,247,206	69.5	816,857	25.1
b/	(2)	26,157	401,519	58.0	174,606	43.5
Total, Tenn. ..	15	593,686	17,343,842	72.8	4,839,514	27.9
Texas	33	3,053,281	39,717,606	62.4	16,368,319	41.2
Utah	6	306,621	3,488,167	50.2	1,960,732	56.2
Virginia	9	375,700	3,741,581	56.8	1,148,661	30.7
Washington	6	86,894	6,883,969	69.1	3,919,474	56.9
West Virginia	6	49,117	2,416,870	77.1	1,265,680	52.4
Wisconsin	11	456,702	4,838,152	74.2	1,993,783	41.2

Progress in Installation of Works of Improvement
in P.L. 566 Watershed Projects by State - Continued

State	Number Projects	Total Watershed Area (Acres)	Total Estimated Federal Cost	% Federal Cost to Total Cost	Total Cumulative Federal Obligations to 6/30/62	% Federal Cost Obligated as of 6/30/62
Wyoming	3	51,458	976,452	84.4	716,825	73.4
Total projects	385	21,774,330	337,651,677	60.1	116,328,755	34.5
Project evaluations	--	--	51,134	--	51,134	--
Undistributed equipment cost ..	--	--	--	--	390,866	--
Grand total ...	385	21,774,330	337,702,811		116,770,755	

- a/ Includes applicable portion of interstate project(s) for which this State has primary responsibility.
b/ Includes applicable portion of interstate project(s) for which another State has primary responsibility.

Soil Surveys and Conservation Plans in Watershed Projects

(Pilot and P.L. 566 Watersheds)

Watershed Protection funds are used to accelerate soil surveys, planning and installation of land treatment measures in watershed projects to the extent that assistance under other conservation programs falls short of meeting project objectives within the agreed upon installation period. The project work plans must include provision for such assistance which includes additional soil scientists to provide for early completion of soil surveys within the project area and additional soil conservationists, engineers, and others to assist farmers and ranchers with the development of basic conservation plans and application of planned conservation measures. The following table shows the acres surveyed and conservation plans prepared in the 1962 fiscal year with Watershed Protection funds and estimates for 1963 and 1964.

Item	1962 Actual	1963 Estimate	1964 Estimate
Soil surveys (acres)	843,342	1,200,000	1,150,000
Total number cooperators assisted	3,776	5,100	4,850
Basic conservation plans prepared:			
Number	3,990	5,300	5,050
Acres	691,580	910,000	870,000

Works of Improvement Installed in Watershed Projects

(Pilot and P.L. 566 Watersheds)

The following table shows the number of operating Pilot and Public Law 566 projects and works of improvement installed in these projects in the fiscal year 1962 and estimated for 1963 and 1964 with Watershed Protection funds.

Item	Unit	1962 Actual	1963 Estimate	1964 Estimate
1. Projects in operation during year:				
(a) Pilot watersheds		16	10	6
(b) P.L. 566 watersheds		346	451	413
2. Works of improvement installed:				
(a) <u>Structural measures:</u>				
(1) Floodwater retarding structures	No.	174	225	225
(2) Multiple-purpose dams	No.	2	8	10
(3) Grade stabilization	No.	107	140	135
(4) Stream channel stabilization	Mile	3	5	5
(5) Stream channel improvement	Mile	233	250	250
(6) Dikes and levees	Mile	1	3	3
(7) Critical area planting	Acre	7,731	10,200	9,600
(8) Roadside erosion control ..	Mile	20	27	26
(b) <u>Land treatment measures:</u>				
(1) Contour farming	Acre	46,953	60,000	58,000
(2) Cover cropping	Acre	77,695	104,000	101,000
(3) Crop residue utilization ..	Acre	187,722	248,000	235,000
(4) Debris basins*	No.	196	250	240
(5) Stripcropping	Acre	4,095	5,500	5,250
(6) Pasture planting	Acre	38,390	53,000	50,000
(7) Terraces	Mile	468	600	550
(8) Diversions	Mile	28	35	30
(9) Pond construction	No.	300	410	390
(10) Waterway development	Acre	864	1,200	1,100
(11) Tree planting	Acre	18,783	26,000	24,800
(12) Woodland planting	Acre	624	850	800
(13) Woodland protection	Acre	6,000	8,000	7,800
(14) Wildlife development	Acre	2,728	3,700	3,500
(15) Structures for water control	No.	227	300	285
(c) <u>Forest fire control:</u>				
(1) Fire control roads, trails and fire breaks	Mile	34	46	44
(2) Structures	No.	1	3	2
(3) Helispots	No.	1	3	2
(4) Mobile equipment	No.	8	11	10
(5) Permanent radio installations	No.	2	3	3

*Includes some basins constructed as structural measures.

Pilot Watershed Projects Demonstrate Program Effectiveness

The pilot watershed demonstration projects are entering their tenth year of operations in fiscal year 1963. It is estimated that about 80 percent of the land treatment measures and 90 percent of the structural measures included in the work plans of the 54 projects completed or nearing completion had been installed as of June 30, 1962.

The regular soil and water conservation district program of technical assistance to farmers and ranchers in the installation of land treatment and structural measures on farms and ranches within the project areas has continued without interruption over the years. The regular program of technical assistance combined with accelerated technical and financial assistance for installation of works of improvement under the watershed protection appropriation has brought work in these watersheds to a high degree of conservation achievement.

The pilot projects have proven to be a valuable training ground to gain experience in watershed development needed to administer the Watershed Protection program conducted under Public Law 566. Experience in such matters as obtaining easements, the detail of surveys to be made in early planning stages, solution of design problems, economic and hydrologic procedures and methods, operation of work plan parties, working with local organizations, and many other experiences in the pilot watersheds have resulted in a more effective and efficient P.L. 566 watershed program.

Information on accomplishments in two of the pilot watersheds follows:

1. Nebraska - Indian Creek Watershed: This 47,870 acre project was authorized for operations August 19, 1953, and is scheduled for completion in the fiscal year 1963 at a Federal cost estimated at \$896,000 and local cost of \$694,000. The project is sponsored by the Gage County Soil and Water Conservation District. All land is privately owned except rights-of-way for public roads, highways, railroads, etc. About 36,000 acres are in cropland and 10,000 in grass.

As of June 30, 1962, approximately 87% of the planned land treatment measures had been applied. Of the 290 farmers in the project, 264 were district cooperators and 242 had developed basic conservation plans. On 23 farms, containing 5,600 acres, conservation treatment had been completed. Some of the major land treatment measures installed include 803 miles of terraces, 1,539 acres of grassed waterways, 40 acres of farmstead windbreaks, and 104 erosion control structures. Twenty-two of the 25 planned floodwater retarding structures had been completed as of June 30, 1962, and one additional floodwater retardation structure was under contract. All 39 planned grade stabilization structures had been completed.

Several storms have occurred of sufficient intensity to fill the floodwater retarding reservoirs above the primary spillways but none of a size that resulted in overflow through the emergency spillways. During the spring of 1959 a short duration rain of 4 to 6 inches occurred in the northern part of the watershed which filled the floodwater retarding reservoirs within one to two feet of the emergency spillways. All reservoirs functioned satisfactorily and without damage to primary spillways. During the rapid

snow melt of March 1960, road and bridge damage was reduced over 75% in the watershed area as compared to adjacent watersheds. In addition, the intensive land treatment resulted in a marked reduction in soil loss. Moderate to severe flooding on flood plain lands has been avoided during the past few years since structural and land treatment measures have been installed in the project.

2. Georgia - North Fork Broad River Watershed Project: This 40,598 acre watershed project was authorized for operations January 14, 1955. Construction work was completed in the fiscal year 1962 at a Federal cost of \$1,050,195 and local cost of about \$548,000. Ninety-nine percent of the watershed is privately owned and one percent is National Forest. The Broad River Soil Conservation District sponsored the project. The principal problems were erosion, siltation, and flooding on 23,193 acres of woodlands, 8,775 acres of cropland, 2,968 acres of pasture, and 5,171 acres of idle land.

As of June 30, 1962, more than 95% of the planned land treatment measures had been applied. The project encompasses 443 farms, of which 431 have basic conservation plans. These 431 farms cover about 80% of the privately owned land in the watershed. The acreages of vegetative measures, including grass and tree planting, have exceeded work plan estimates. For example, 2,091 acres of pasture seeding were planned, and 3,610 have been applied. All of the 12 planned floodwater retarding structures have been completed. Paved roads have been constructed over structures Nos. 4 and 10, in which the Stephens County Road Commissioners shared in the construction costs to the extent required to provide a 28-foot top width. All planned channel improvement has been completed. All easements for the structural measures were secured through excellent cooperation between the district supervisors and the business people in the project area.

The project installation have proven very effective. In March 1961, 5 to 7 inches of rain fell on various parts of the project within 12 hours, but there was no floodwater or sediment damage within the project. The project has been an excellent example of the effectiveness of a good land treatment program working in conjunction with installed floodwater retarding structures, sediment control structures, and channel improvement. Many interested conservation groups have toured the watershed to observe the effectiveness of a good watershed project. The project has resulted in more than 300 acres of fertile bottom land being returned to production from non-use due to flooding and sediment damages.

Installation in P.L. 566 Projects Providing Protection

Planned installations of land treatment and structural measures for watershed protection and flood prevention had been completed in 44 P.L. 566 projects as of June 30, 1962, and work was progressing well in most of the other 224 projects continuing construction in the 1963 fiscal year. The measures installed were proving their effectiveness in reducing floodwater, erosion, and sediment damages in the watersheds as evidenced by the following typical examples:

1. Kentucky - Cypress Creek Watershed Project: The principal problems in this 32,424 acre watershed project were floodwater and sediment damages to agricultural lands. The project was authorized for operations in May 1957, and is scheduled for completion in 1964 at a Federal cost of \$343,000 and local cost of \$635,000. The local project sponsors are the Union County Soil Conservation District, the City of Sturgis, Union County Drainage Board, and the Union County Fiscal Court.

Approximately 90% of the needed land treatment measures estimated to cost \$546,000 have been applied. As of June 30, 1962, all of the critical area stabilization work had been completed. Two floodwater retarding structures, 54,050 lineal feet of channel improvement, 8.1 miles of subwatershed waterways, and two desilting dams had been completed. Four and one-half miles of subwatershed waterways were under contract. This will complete all structural measures planned for the project except one floodwater retarding structure which was deleted from the work plan due to the expense involved in obtaining required easements. Easements and rights-of-way valued at \$35,000 were obtained from 120 landowners by the sponsoring local organization.

The installed measures have already been tested and proven effective. A 3-inch rainstorm fell on May 7, 1961, following a day of less intense rain that had soaked most of the watershed. Ditches below the floodwater retarding structures did not run more than one-half full. On an adjoining area where the proposed floodwater retarding structure had not been built, several hundred acres were flooded. The completion of channel improvement work protected the City of Sturgis from a backwater flood, according to the Mayor. As the rivers fell the backwater went right on out. Before the channel improvement work was done the backwater would have been trapped in Sturgis and held back for a week or ten days after the rivers had returned to normal.

2. Oklahoma - Bear, Fall, and Coon Creek Watershed Project: Operations began in this 120,960 acre watershed project in June 1958. It is scheduled for completion in the fiscal year 1963. The sponsors are the Logan, Lincoln, and Oklahoma County Soil Conservation Districts and the Bear, Fall, and Coon Creeks Soil and Water Conservation District. The total cost is estimated at \$1,975,000 of which about \$1,300,000 is Federal. The principal problems in the watershed are frequent flooding, scouring, gully erosion, and deposition of silt with accompanying damage to crops, fences, and public roads.

More than 80% of the planned land treatment measures have been applied. There are 442 farms in the watershed of which 331 had developed basic conservation plans, covering 77,538 acres as of June 30, 1962. All of the needed waterways have been constructed. Of the 60 miles of diversion terraces needed, 40.5 miles have been built. Twenty-six of the 31 planned floodwater retarding structures had been completed as of June 30, 1962, at a Federal cost of about \$1,205,000. The largest structure in the project is currently under construction. Four more are to be built in 1963 to complete the project. Total estimated Federal cost of all floodwater retarding structures is \$1,269,869. One structure was built as a multiple-purpose structure at an additional cost of about \$5,000 to the landowner. Easements and rights-of-way, valued at \$186,000, have been obtained by the local sponsors for the structural measures.

No serious flooding has occurred on any of the three creeks in the project since 1959. However, much flooding occurred in the fall of 1960 and again in the spring of 1961, on adjoining untreated watersheds. On Cottonwood Creek, an adjoining watershed, severe flooding occurred also on June 9, 1962, causing the evacuation of approximately 700 people in the City of Guthrie. No flooding occurred on Bear, Fall, and Coon Creeks from this rain. Local landowners are convinced that land treatment measures and the 26 detention dams already installed prevented flooding in the watershed project.

Multi-purpose Watershed Projects Increasing

Local watershed sponsors are beginning to take full advantage of the opportunities offered under Public Law 566 to develop multi-purpose watershed projects which incorporate all the needed features not only for sound land and water management but also for economic and social development of the rural community. Over 36 percent of the 443 projects approved for operations as of November 1, 1962, included structural measures with purposes other than flood prevention. This compares with 33 percent of all approved projects containing multi-purpose structural measures as of June 30, 1962, and 30 percent as of June 30, 1961. Of the 58 projects approved for operations during the period July 1 to November 1, 1963, 32 projects or 55 percent included multi-purpose structural measures.

Of the 443 projects approved for operations as of November 1, 1962, 160 included structural measures incorporating one or more purposes other than flood prevention. Agricultural water management features were included in 106 projects, fish and wildlife or recreational developments in 54 projects, and municipal water supplies in 32 projects for a total of 192 purposes other than flood prevention included in 160 multi-purpose projects.

Recent amendments to Public Law 566 (76 Stat. 608-610) broaden authorities of the Department to provide assistance to local organizations to develop recreational facilities and water supplies for future municipal or industrial use in watershed projects. This added opportunity to develop dependable water supplies for future municipal or industrial use with the increased chances of attracting industries to rural communities and the opportunity to develop fish and wildlife and recreational facilities to improve the use of leisure time will give added impetus to the development of multi-purpose watershed projects.

The following sections give additional detail and examples of the type of multi-purpose watershed projects currently underway in cooperation with local organizations.

Agricultural Water Management Features Included in P.L. 566 Projects

One hundred and six of the 443 projects approved for operations as of November 1, 1962, included structural measures for agricultural water management purposes in addition to flood prevention features. Eighty-three of these projects included drainage improvements; twenty-one, irrigation; one, agricultural water level control; and one, agricultural water supply. The total installation cost of the agricultural water management features in the 106 projects is approximately \$21,600,000. Local interests are to bear about \$12,400,000 of this cost. The

total estimated cost of structural measures for all purposes in the 106 projects is about \$77,000,000. Two typical examples of these projects where the local people are installing locally important measures to develop, conserve, more efficiently utilize, and dispose of excess water supplies follow:

1. Idaho - Cedar Creek Watershed Project: The primary objectives in this 126,720 acre project authorized for operations on March 19, 1962, are to improve the irrigation water supply, prevent distribution system failures, improve irrigation efficiencies, and provide more dependable delivery for full irrigation of lands below the primary canal. The total cost of the project is estimated at \$932,550 of which about \$323,160 is Federal. The Twin Falls Soil Conservation District and Cedar Mesa Reservoir and Canal Company are sponsoring the project. About 5 percent of the watershed area is cropland, 91 percent range, and 4 percent forest. Approximately 24 percent is privately owned.

The going programs of the Bureau of Land Management and U. S. Forest Service are adequate for maintenance and protection of the Federal lands in the project. On the privately owned irrigated lands water use improvements had been made on about 2,000 acres of the approximately 5,375 acres to be irrigated under project conditions as of June 30, 1962. The plan for the project includes the installation of land treatment measures designed to insure the maximum returns from available water supply such as land leveling on 3,375 acres, 30 miles of field ditches, 120 open ditch structures, 30 regulating reservoirs, 30 irrigation pump plants, proper irrigation water use on 5,375 acres, conservation cropping systems on 5,375 acres, and proper pasture use on 1,000 acres.

Planned structural measures include 2 diversion dams, 0.91 miles of canal enlargement, 1.56 miles of bench flume, and 31 open ditch structures. Surveys and investigations needed to complete final designs and specifications were in progress June 30, 1962. The first contract is scheduled for award in December, 1962, the second in June, 1963, and the final contract is scheduled for February, 1964. The Cedar Mesa Reservoir and Canal Company has initiated steps to obtain the needed easements and rights-of-way. These proceedings are scheduled to be completed for the first contract by mid-October, 1962. A Farmers Home Administration loan has already been approved to help defray the local share of project construction cost.

2. North Carolina - Burnt Mill Creek Watershed Project: This 10,496 acre project was authorized for operations June 25, 1959, and completed in the fiscal year 1962. The project sponsors are the Albemarle Soil and Water Conservation District and Perquimans County Drainage District No. 4. The total cost of the project was \$95,400 (\$44,335 Federal and \$51,065 non-Federal). About 60% of the land in the project area is owned by individuals and 40% is owned by three commercial timber companies. About 1,760 acres are in cropland, 240 acres in pasture, 8,376 in woodland, and 120 acres are idle or in miscellaneous uses. The main problems in the watershed were poor land drainage and floodwater damage to crops and roads.

As of June 30, 1962, about 70% of the planned land treatment measures had been applied. There are 38 farms in the watershed in addition to the 3 commercial timber company holdings. Approximately 90% of the privately

owned farm land is under conservation plans. Nine miles of stream channel improvement were completed by November of 1961, including spreading and seeding the spoil bank and the installation of culverts and surface inlets. The Perquimans County Drainage District borrowed \$7,229 from the Farmers Home Administration to help defray the local share of construction costs of this multi-purpose project designed to prevent floodwater damage and provide drainage improvements.

No damage occurred in the project area from Hurricane Donna September 12, 1960, except a few fallen trees. Although almost 6 inches of rainfall occurred in a day and a half, the 9 miles of completed channel improvements saved the crops in the watershed according to the landowners. There was no flooding of cropland or roads while damage in other watersheds in the county was heavy. Landowners in adjoining Pollock Swamp Watershed have renewed their efforts to get their watershed project started after seeing the effectiveness of the project installation in the Burnt Mill Watershed. Losses were heavy in Pollock Swamp Watershed and the surrounding area from Hurricane Donna.

Public Fish and Wildlife and Recreational Developments
Being Included in P.L. 566 Watershed Projects

The Watershed Protection and Flood Prevention Act, as amended, includes provision for Federal assistance in the installation of works of improvement for public fish and wildlife and recreational development in watershed projects where the State and local sponsors contribute at least 50% of the cost of such developments. Local sponsors and fish and game agencies are showing widespread interest in the development of these additional purposes in watershed project. As of November 1, 1962, the local sponsoring organizations in 42 watershed projects had included fish and wildlife development features in their watershed work plans, and 12 had included recreational developments. Total installation cost of these features is estimated to be \$7,900,000 of which local interests will pay about \$4,300,000. The following examples are typical of the fish and wildlife and recreational developments being installed as a part of watershed project plans:

1. New Jersey - Stony Brook Watershed Project: The project area includes 31,000 acres, practically all of which is privately owned. The project was started in the fiscal year 1957 and all works of improvement are scheduled for completion by 1966. The sponsors of the \$757,000 project (\$562,000 Federal and \$195,000 non-Federal) are the Mercer and Huntingdon County Soil Conservation Districts and the Stony Brook-Millstone Watershed Association, Inc. The principal problems in the watershed include sediment damage to existing recreational facilities and the need to develop additional recreational facilities.

As of June 30, 1962, about 54% of the planned land treatment measures had been applied. There were 319 district cooperators covering 28,600 acres in the project area as of this same date and 174 of these had developed basic conservation plans on 13,300 acres. The principal land treatment measures applied in the project area are contour farming, 1,862 acres; strip-cropping, 1,605 acres; cover cropping, 1,455 acres; field diversions, 21.6 miles; hedgerow planting, 3 miles; and waterway development, 12 acres.

Forestry accomplishments to June 30, 1962, consist of 293,000 trees planted on 240 acres, 465 acres marked for improvement or harvest, 378 acres harvested, 130 acres of hydrologic stand improvement, and 101 forest management plans prepared involving 1,950 acres. Technical assistance was provided to 175 landowners and 52 timber operators in the 1962 fiscal year.

As of June 30, 1962, four of the nine planned desilting basins had been completed. Two farmers paid all the local share of the cost allocated to 37 acre feet of irrigation water storage provided in one structure. One other basin was under construction as of June 30, 1962. The New Jersey Division of Fish and Game purchased land for two of the basins for public fishing. It is expected that two additional basins will be constructed in fiscal year 1963.

Easements and rights-of-way valued at \$15,000 have been obtained for 5 sites. The New Jersey Fish and Game Division is presently engaged in obtaining ownership of 3 additional sites for wildlife purposes and easements along the Stony Brook for channel bank erosion control to improve fishing.

2. Texas - Cummins Creek Watershed Project: Works of improvement are planned for installation over a 10-year period within 204,896 acres project authorized for operations on June 6, 1956. The sponsors are the Cummins Creek Water Control and Improvement District No. 1, Fayette and Lee Counties, and the Burleson-Lee, Bastrop-Fayette, Austin-Washington, and Colorado Soil Conservation Districts. The estimated total cost of the project is \$5,084,000 of which \$2,258,000 is Federal. Principal problems are floodwater and sediment damages to agricultural lands. There are 47,000 acres of cropland in the project, 144,000 acres of pasture, range and wooded range, 2,000 acres of woods and 12,000 acres of miscellaneous land, including land formerly cultivated, farmsteads, roads, stream channels, etc.

Progress in installation of land treatment measures has been slow. As of June 30, 1962, 20 percent of the land treatment measures had been applied. It was estimated that 60 percent of the practices would be applied by the end of 1962. Of the 1,183 operating units in the project, 646 were district cooperators and 520 had developed basic conservation plans as of June 30, 1962. Good progress has been made in installation of structural measures except in some instances where difficulty has been experienced in obtaining easements. Construction had been completed on 18 of the 31 planned floodwater retarding structures as of June 30, 1962, and vegetation had been established on 6 of the structures.

The land treatment and structural measures installed to June 30, 1962, have proven very effective. The storm of September 10-12, 1961, produced a maximum of 16.0 inches of rainfall in the east central part of the watershed and averaged 14.1 inches for the entire watershed. The 18 completed floodwater retarding structures functioned as planned. Emergency spillways of two structures had flows up to 0.5 foot but no damage occurred to the structures. The floodwater retarding structures and applied land treatment measures reduced the estimated damages from \$153,400 to \$125,300, a benefit of \$28,100. With the complete planned project of land treatment and 31 floodwater retarding structures installed, it is estimated that the damages would have been reduced to \$82,300, a reduction of \$71,100.

All 18 of the completed floodwater retarding structures are used for recreational purposes to some extent. The landowner on one site has constructed camp houses, boat docks, and other facilities for public use. From 2,000 to 3,000 people enjoy some form of recreational activity at this site throughout the year. On week-ends during the summer there are large number of people boating, water skiing, swimming, fishing, and picnicking. The landowner receives considerable income from recreation at this site. Another site is leased to a hunting and fishing club. An average of about 50 to 100 families enjoy hunting, fishing, boating, or picnicking at each of the other completed sites on the watershed during the year. Many people also fish along Cummins Creek which now has a prolonged steady flow of water and provides good fishing throughout the year. Several of the sites were stocked with fish through the cooperation of the State Fish and Game Commission. All sites are used for stockwater to some extent.

Projects Include Municipal Water Supply

The Watershed Protection and Flood Prevention Act, as amended, permits the inclusion of additional storage capacity in reservoirs constructed in watershed projects to satisfy present and future needs for municipal and industrial water supplies. Local organizations must pay the entire cost of construction, including engineering and other installation services for the additional capacity. However, to enable inclusion of the additional storage advances may be made to local organizations from construction funds interest free up to a maximum of ten years or until the water is first used. Advances must be repaid with interest within the life of the structure but not to exceed 50 years from the time the water supply is first used. The opportunity to assure future water supplies to small communities with the resultant increased chances of attracting industry is creating considerable interest in this feature of watershed project development. As of November 30, 1962, local sponsors in 32 watersheds had included municipal water supply features in their watershed work plans. The total installation cost of these features in the 32 projects is about \$10.6 million. Two examples of projects which include capacity for municipal water supply follow:

1. Georgia - Hazel Creek Watershed Project: The principal problems in this 19,560 acre watershed which was authorized for operations August 31, 1960, are floodwater and sediment damage to lowlands and badly eroding uplands. The City of Cornelia also needed additional water supplies. The project is scheduled for completion in 1966 at an estimated total cost of \$475,818 of which \$259,666 is Federal and \$216,152 non-Federal.

As of June 30, 1962, more than 75% of the planned land treatment measures had been applied. Of the 340 farmers in the project, 262 were district cooperators and 249 had developed basic soil and water conservation plans. Two floodwater retarding structures have been completed. One of these structures is a multiple-purpose structure which provides the City of Cornelia 150 acre-feet of municipal water storage. A contract for the third floodwater retarding structure has been let, and the fourth and last structure will be contracted earlier in the fiscal year 1963. A contract for approximately five miles of channel improvement work has been let, and the work was almost completed as of June 30, 1962. Another 4.4 miles to be contracted in fiscal year 1963 will complete the stream channel work.

Some effectiveness of the project has been noted even though structural measures were only partially completed as of June 30, 1962. Within a week after the first floodwater retarding structure was completed, heavy rains filled the reservoir which gave some protection to the bottomland below. The completed floodwater retarding structures and stream channel improvements are enabling the landowners to make more intensive use of their bottomlands.

2. Illinois - Big Blue Watershed Project: The principal problems in this 26,690 acre project approved for operations June 25, 1959, are sediment and erosion damage to agricultural lands and insufficient municipal water supply in the town of Pittsfield. It is estimated that the project will be completed in the fiscal year 1964 at a Federal cost of \$184,878 and a local cost of \$535,500.

It is estimated that 48% of the planned land treatment had been completed as of June 30, 1962. Over 1,200 acres were being contour farmed, 18.5 acres of grassed waterways had been developed, 6.5 miles of terraces and diversions had been built, 9 stabilizing structures installed, and 40 acres of trees planted. Twenty-five ponds for livestock water had been built and 137 acres of wildlife habitat developed. All structural measures had been installed as of June 30, 1962. Only two were planned, a small thirty-acre floodwater retarding structure and one large multi-purpose structure. The town of Pittsfield, Illinois, co-sponsor of the project, paid for 4,391 acre/feet municipal water storage included in the large multi-purpose structure. Easements and rights-of-way were obtained at a cost of \$180,000. This includes 130 acres of land surrounding the 30-acre structure and 500 acres of land surrounding the 241 acre structure.

The project installations have been tested and proven effective. The calendar year 1961 was a wet year with 51 inches of rainfall measured in the watershed, 15 inches above normal. Only one rain, a 4-inch rain in two hours that covered the entire watershed, caused any flooding. Downstream landowners are convinced of the effectiveness of the floodwater retarding structures. Fishing and boating by local residents is growing at a fast pace on the larger multi-purpose lake. The smaller lake serves the county's Boy Scout troops as their recreational area. They have planted pine trees and multi-flora rose for fences around this lake. The people of Pittsfield are pleased with and proud of their watershed project.

Watershed Project Benefits Greatly Exceed Costs

The total estimated installation cost of the 385 Watershed Protection projects approved for operations as of June 30, 1962, is about \$562,000,000. Approximately \$338,000,000 of this cost will be borne by the Federal Government from funds provided under Public Law 566 and the remaining \$224,000,000 will be borne by State, local, and other Federal interests.

Structural measures comprise about \$391,000,000 of the total project installation cost in the 385 projects. Funds made available under Public Law 566 will bear approximately \$317,000,000 of this cost and local interests will assume the balance of \$74,000,000. For every \$1.00 invested for structural measures in the 385 projects, a return of about \$1.80 is expected. The total average

annual benefit from project structural measures is estimated to be \$29,400,000 and the total average annual cost is estimated to be \$16,300,000.

The total cost of installing land treatment measures on the 385 projects is estimated at \$171,000,000. Funds appropriated under Public Law 566 will bear about \$18,500,000 of this cost, and other local, State, and Federal interests will bear the remaining \$152,500,000. Local organizations will bear all operation and maintenance costs. Many economic studies and years of experience have shown that benefits from land treatment measures exceed costs; thus, in program planning, no benefit-cost calculations are made for land treatment measures for watershed protection.

Other Countries Benefit from Watershed Experience
and Leadership of this Department

Soil and water conservation activities are moving ahead in many parts of the world. People on the land are being helped by their governments as well as by United Nations Organizations, various agencies of the Federal Government of the United States, and private foundations and groups. Some few foreign countries following the experiences of this Department are finding watersheds of various sizes to be the most practical management unit for dealing with soil and water problems on a community basis. The technical know-how, leadership, and experience of this Department in solving land and water problems through the small watershed community approach has been made available to other countries which request such help through authorized Federal agencies in certain instances on a reimbursable basis or by transfer of funds.

During the 1962 fiscal year the Agency for International Development requested the Soil Conservation Service to furnish technical assistance to the Government of Tunisia in the field of soil and water management. The services required are part of a program for watershed planning and development. Plans call for developing a multi-purpose watershed project on the Oued Marguellil watershed. A watershed planning organization recruited from the Service's trained staff of technical specialists is currently engaged in developing a watershed work plan for this project. The establishment of this project will provide a "pilot" demonstration watershed in Tunisia where Tunisian technicians can be trained in soil and water conservation and management. All technical phases for installation of this project are to be done by the Soil Conservation Service through memorandum of agreement with the Agency for International Development.

LOANS AND RELATED EXPENSE - P.L. 566

Loan Activities

Under Section 8 of Public Law 566, 83rd Congress, as amended by Public Law 1018 of the 84th Congress, loans are authorized to be made to local organizations to help defray the local share of the cost of Watershed Protection projects. The Farmers Home Administration is responsible for making loans under provisions of the Act for watershed projects which have been approved for installation of works of improvement. The law requires that all of the costs allocated for flood prevention purposes, except the cost of easements and rights-of-way, water rights, and administration of contracts, be paid from Federal funds. Most of the loans, therefore, are expected to be made for the local share of the cost of multiple-purpose projects, organizational expenses, legal costs, and the acquisition of land, and easements and rights-of-way which the local organizations find they must purchase.

No loans will be made under this authority for the local costs of land treatment measures installed in the project primarily for watershed protection purposes. These land treatment measures primarily benefit the lands upon which they are installed, and the costs are normally borne by the individual land-owners rather than by the sponsoring organization, although Federal cost-sharing and technical assistance is available for most of these measures through other Departmental conservation programs.

Application for Loans

During the fiscal year 1962, 35 application for watershed loans amounting to about \$6.4 million in Public Law 566 projects were received by the Farmers Home Administration. This compares with 27 applications amounting to \$6.1 million received the preceding fiscal year. On October 15, 1962, there were 72 active applications totaling \$16.1 million and state directors had been authorized to approve 8 other applications totaling \$1.1 million. It is estimated that a total of about 30 applications will be received during fiscal year 1963.

Characteristics of Loan Requests

Applications for loans received by the Farmers Home Administration have varied greatly in amount. Slightly more than half of these applications have been for loans of \$100,000 or more. Most applications have included requests for funds to purchase rights-of-way and pay legal fees and organization costs. The larger loan requests have also included funds to pay the local organization's share of the installation costs of drainage channels, municipal water storage, irrigation works and other multiple-purpose improvements. The smallest loan approved thus far was for \$7,229 and the largest was for \$1,769,000. As of October 15, 1962, 32 watershed loans amounting to \$5,661,733 have been approved. The following are representative of the nature of these approved loans:

1. Muscogee County, Georgia (Bull Creek Watershed Project): A loan of \$600,000 was made to Muscogee County to pay local costs of rights-of-way, relocations, legal services and contract administration for the project which includes plans for installation of 11 floodwater retarding structures and 62,000 feet of drainage channel. When completed, these improvements will protect 44,000 acres of land and approximately 1,000 homeowners in suburban areas of Columbus. Term of the loan is 30 years.
2. Bertie, Hertford, Northampton Counties Drainage District No. 1, North Carolina (Ahoskie Creek Watershed Project): A watershed loan of \$266,400 was made to the drainage district to supplement \$111,000 furnished by the State Highway Commission and the towns of Ahoskie and Aulander, North Carolina, in order to pay local costs of this flood prevention and drainage project benefiting 48,150 acres in the three counties. The district used the loan to purchase rights-of-way, pay legal fees and pay its share of the costs of constructing drainage facilities. Term of the loan is 20 years.

RIVER BASIN PROGRAM DEVELOPMENT AND COORDINATION

Agency Participation

Funds for surveys and investigations of river basin areas to formulate coordinated inter-agency programs for their development are allocated to participating agencies in the Department as follows:

Agency	: 1962 : Obligations	: 1963 : Estimated	: 1964 : Estimated
Soil Conservation Service	: \$723,888	: \$1,572,300	: \$2,808,700
Forest Service	: 87,796	: 158,000	: 296,000
Economic Research Service	: 182,075	: 312,600	: 449,300
Total	: 993,759	: 2,042,900	: 3,554,000

Section 6 of P.L. 566, 83rd Congress, as amended, authorizes the Secretary of Agriculture to cooperate with other Federal, State, and local agencies in making surveys and investigations of the watersheds of rivers and other waterways as a basis for the development of coordinated water and related land resources programs. The Department is represented on the Inter-Agency Committee on Water Resources which has been established to facilitate the coordination of water and related land resource activities by the various member Federal departments and agencies. The Department also maintains representation on various River Basin Inter-Agency Committees, which serve as points of contact and coordination between representatives of this Department and of other Federal departments and agencies and the States in these basin areas, to keep all concerned mutually informed of the activities of the member agencies and to facilitate matters of inter-agency coordination. The Department, in 1962, maintained such representation on Committees in the Arkansas-White-Red, Columbia, Missouri, Northeast, and Southwest areas.

The Department is participating in cooperative surveys and investigations with the Corps of Engineers in the Upper Mississippi River-Great Lakes area; the Arkansas River Multiple-Purpose Project in Arkansas and Oklahoma; the Susquehanna River Basin in Pennsylvania, New York, and Maryland; the Meramec River Basin in Missouri; the Poteau River Basin in Oklahoma and Arkansas; the Ohio River Basin as a whole on a general basis and the subbasins of the Wabash River in Indiana and Illinois, and the Ohio and the Kanawha River in West Virginia on a more detailed basis; and the Red River in Louisiana, Arkansas, Texas, and Oklahoma. The Department is also completing a report on its participation in the survey of the Potomac River Basin in Virginia, Maryland, West Virginia, and Pennsylvania with the Corps of Engineers. It is participating with the State of Oregon and the Corps of Engineers in a survey of the Willamette River Basin in Oregon; and with the State of New York and the Corps of Engineers in a survey of the Genesee River Basin in New York and Pennsylvania. In cooperation with the Department of the Interior it is completing this fiscal year a reappraisal of the direct agricultural benefits anticipated from certain of the participating projects in the Upper Colorado River Storage Project.

Surveys also are being made of the Tombigbee and Pearl-Big Black River Basins in cooperation with the Mississippi Board of Water Commissioners, the Alabama Water Resources Study Commission and the State of Louisiana; with the Nevada Department of Conservation and Natural Resources in the Humboldt River Basin; with the Oregon State Water Resources Board in various Oregon River Basins; with agencies of the State of Utah in the Sevier River Basin; with the Colorado Water Conservation Board in the Gunnison and Upper Colorado River Basins; with the State of South Dakota Water Resources Commission in the James River Basin; with the State of Florida Board of Conservation in the Florida West Coast area; with the Nebraska State Soil and Water Conservation Commission in the Elkhorn and Big Blue River Basins; and with the Texas State Board of Water Engineers in the Texas River Basins outside the U. S. Study Commission area. Some cooperative assistance is being provided to the U. S. Study Commission for the Southeast River Basins.

Joint consideration has been given by representatives of this Department and of the Departments of the Army, the Interior, and Health, Education, and Welfare to river basin surveys and investigations needed now in starting to attain the goal proposed by the Senate Select Committee on National Water Resources and accepted by the Administration of surveying the river basins of the country by 1970. Out of this joint consideration has developed the need for this Department, beginning in the fiscal year 1964, to participate cooperatively with these other Departments in surveys of the Puget Sound area in Washington; the Colorado River Basin; the Missouri River Basin; the White and St. Francis River Basins in Missouri and Arkansas; various river basins in East Texas; the Grand and Fox River basins in Michigan, Wisconsin, and Illinois; the Upper Mississippi-Great Lakes and Big Muddy River Basins; the Connecticut, St. John and other Northeast River Basins; and the Pascagoula River Basin in Mississippi.

The following examples are representative of the surveys and investigations being carried on by the Department in river basin areas:

1. Susquehanna River Basin - Maryland, New York, and Pennsylvania: In cooperation with the Corps of Engineers, the Department is participating in a survey and investigation of the Susquehanna River watershed in Maryland, New York and Pennsylvania. A basin water resources report based on a projection of some 50 years is to be prepared. The Soil Conservation Service, Forest Service and Economic Research Service are participating in the study for the Department. Present schedules contemplate the completion of this survey in the fiscal year 1970.
2. Humboldt River - Nevada: The Department is cooperating with the Nevada Department of Conservation and Natural Resources in a survey and investigation of the watershed of the Humboldt River to develop information which will provide a basis for the development of sound watershed protection projects under Public Law 566; and for the coordination of water and land resource conservation, development and improvement projects and programs of the Department with related projects and activities of the State and of other Federal agencies. Several other State and Federal agencies also are cooperating with the State in the consideration of related matters with which they are concerned.

3. Pearl and Big Black Rivers - Louisiana and Mississippi: In cooperation with the Board of Water Commissioners of the State of Mississippi and the Louisiana Department of Public Works, a survey and investigation of the watersheds of the Pearl and Big Black Rivers is under way. Information developed is to be used by the Department to determine opportunities for development of watershed protection projects under P.L. 566 and in coordinating its watershed and other programs with soil conservation districts and other local organizations, agencies of the Mississippi and Louisiana State Governments, and other Federal agencies. The information will be used by the Mississippi Board of Water Commissioners in planning and administering the physical aspects of water use and management in the basin. The survey is expected to be completed in the fiscal year 1968.



(c) Flood Prevention

Appropriation Act, 1963	\$25,000,000
Proposed supplemental, 1963, for increased pay costs	343,000
Base for 1964	<u>25,343,000</u>
Budget Estimate, 1964	25,576,000
Increase	<u>+233,000</u>

Note: The budget estimate for 1964 proposes an increase of \$233,000 over the base for 1964. The following justifications are presented on the basis of available funds, and the amount for 1963 reflects availability of unobligated balances carried over from 1962. While this presentation reflects an estimated net decrease in obligations amounting to \$4,037,717 in 1964, it is likely that there will be some carryover of unobligated balances from 1963 to 1964. The extent to which there may be such carryover cannot be estimated at this time.

SUMMARY OF INCREASES AND DECREASES, 1964
(On the basis of available funds)

Decrease in installation of works of improvement due to availability of balances in 1963 which are not reflected in the estimate for 1964	-3,454,217
Decrease in loans to local sponsoring organizations due to availability of balances in 1963 which are not reflected in the estimate for 1964 ..	-794,500
Reduction to reflect estimated savings due to the installation of a centralized data processing operation (MODE) for personnel and payroll data	-22,000
Increase for pay act costs pursuant to Public Law 87-793	+233,000
Net decrease	<u>-4,037,717</u>

PROJECT STATEMENT
(On the basis of available funds)

Project	1962	1963 (estimated)	Increase or Decrease		1964 (estimated)
			Increased Pay and Postal Costs: (P.L.87-793):	Other	
1. Works of improvement:	\$23,151,572	\$27,819,217	+\$233,000	-\$3,476,217(1)	\$24,576,000
2. Loans and related expense	205,500	1,794,500	- -	-794,500(2)	1,000,000
Subtotal a/	23,357,072	29,613,717	+233,000(3)	-4,270,717	25,576,000
Unobligated balance brought forward	-2,633,310	-4,270,717	- -	+4,270,717	- -
Unobligated balance carried forward	4,270,717	- -	- -	- -	- -
Total increased pay costs (P.L.87-793) ..	(- -)	(343,000)	(+233,000)	(- -)	(576,000)
Total available or estimate	24,994,479	25,343,000	233,000	- -	25,576,000

(Continued on next page)

Project	1962	1963 (estimated)	Increase or Decrease		1964 (estimated)
			Increased	Decreased	
			Pay and	Other	
			Postal Costs:		
			(P.L.87-793):		
Transferred to "Oper-					
ating expenses, Public					
Buildings Service,					
General Services					
Administration"	+5,521:	- - :			
Proposed supplemental					
for increased pay costs	- - :	-343,000:			
Total appropriation or					
estimate	25,000,000:	25,000,000:			

a/ Represents obligations. Applied costs for 1962 are \$19,538,579. The difference of \$3,818,493 reflects, primarily, the excess of construction work contracted over construction work actually accomplished in that year.

INCREASES AND DECREASES
(On the basis of available funds)

The decrease of \$4,037,717 for work in the authorized flood prevention projects is distributed as follows:

(1) A net decrease of \$3,476,217 consisting of:

(a) A decrease of \$3,454,217 in the projected obligations for installation of works of improvement in the authorized flood prevention projects due to availability of prior year balances in 1963 and reflection of none in the estimate for 1964. Installation of works of improvement is expected to be essentially complete in the Buffalo Creek Project in New York State by the end of the fiscal year 1963. Unobligated balances carried forward on this project are expected to be sufficient to complete the current construction contract and the completion report on this project in 1964. This will leave 10 of the original 11 authorized flood prevention projects in operation in the fiscal year 1964 for which funds will be required. The budget estimate proposes continuation of installation of works of improvement at the current appropriation level which has prevailed since 1962.

Estimated obligations of \$27,819,217 in the fiscal year 1963 include a proposed supplemental in the amount of \$343,000 for pay act costs and a carryover of unobligated balances in the amount of \$3,476,217 from prior years. This carry-over resulted primarily from construction work held up while local organizations completed financial arrangements for easements and other local construction costs. Although a decrease of \$3,454,217 from the 1963 estimated obligations is indicated, it is likely that there will be some carryover of unobligated balances from 1963 to 1964. The extent to which there may be such carryover cannot be estimated at this time.

The following table shows the 1962 actual obligations and estimates for 1963 and 1964 for individual watersheds:

Distribution of Funds to Watersheds

Watershed	Total Availability, 1963				Budget	
	Obligations	Total Available	Balance	Estimated	Carried Forward	Appropriation
	1962	a/	from 1962:	1963	1964	Estimate
Buffalo Creek, New York	\$271,004:	\$555,548:	\$205,064:	\$350,484:	-	-
Colorado (Middle), Texas	2,208,644:	1,980,400:	156,271:	1,824,129:	\$1,841,900	
Coosa, Ga., Tenn.	825,514:	1,663,604:	346,633:	1,316,971:	1,337,700	
Little Sioux, Iowa, Minn.	717,137:	1,763,674:	492,186:	1,271,488:	1,313,900	
Little Tallahatchie, Miss.	891,890:	1,949,080:	532,780:	1,416,300:	1,439,000	
Los Angeles, Calif.	2,214,940:	1,808,125:	134,707:	1,673,418:	1,897,700	
Potomac, Md., Pa., Va., W. Va.	1,303,936:	2,745,291:	809,197:	1,936,094:	2,133,200	
Santa Ynez, Calif.	1,734,932:	1,191,630:	247,101:	944,529:	706,400	
Trinity, Texas	4,310,208:	4,359,888:	56,768:	4,303,120:	4,400,200	
Washita, Okla., Texas	5,207,176:	5,554,263:	54,696:	5,499,567:	5,488,600	
Yazoo, Miss.	3,436,024:	3,947,714:	440,814:	3,506,900:	3,717,400	
Emergency Measures	30,167:	300,000:	-	300,000:	300,000	
Loans and Related Expense	205,500:	1,794,500:	794,500:	1,000,000:	1,000,000	
Total	23,357,072:	29,613,717:	4,270,717:	25,343,000:	25,576,000	

a/ Includes proposed supplemental appropriation of \$343,000 for increased pay costs.

a/ Includes proposed supplemental appropriation of \$343,000 for increased pay costs.

(b) A reduction of \$22,000 to reflect estimated savings due to the installation of a centralized data processing operation (MODE) for payroll and personnel data. An explanation of this reduction is included in the Preface to these Explanatory Notes. The entire reduction has been reflected in the activity for installation of works of improvement.

(2) A decrease of \$794,500 in projected obligations for loans to local organizations under Section 8 of Public Law 566, as amended due to availability of balances in 1963 which are not reflected in estimates.

Estimated obligations of \$1,794,500 in 1963 includes a carryover of \$794,500 from 1962. The budget request of \$1,000,000 for loans to local sponsoring organizations in 1964 is the same as the amount appropriated for this purpose in 1963. The estimated \$794,500 decrease in loans in 1964 results from an assumption that all of the balance carried forward from 1962 will be used in 1963 based upon faster loan processing and wider interest in the loan program.

(3) An increase of \$233,000 for pay costs pursuant to Public Law 87-793. (An over-all explanation of increases for pay act costs is included in the Preface to these Explanatory Notes in Volume 1.)

STATUS OF PROGRAM

Current Activities: The Flood Control Acts, as amended and supplemented (33 U.S.C. 701-709, 16 U.S.C. 1006a, 76 Stat. 610), provide for installation of (1) mainstream works of improvement for the control of floods, for which the Department of the Army is responsible, and (2) watershed improvement measures to prevent floods; reduce floodwater, sediment, and erosion damages; and further the conservation, development, utilization, and disposal of water, for which the Department of Agriculture is responsible. The work of this Department under this item, which is carried on in the 11 watersheds authorized by the Flood Control Act of December 22, 1944, as amended and supplemented, consists of:

1. Preparation of detailed subwatershed work plans in collaboration with soil conservation districts and other local sponsoring organizations. These plans outline soil and water management problems in subwatersheds, what has been or is planned to be done to alleviate these problems, the proposed works of improvement to be installed, the estimated benefits and costs, cost-sharing and operation and maintenance arrangements, and other facts necessary to justify Federal participation in project development.
2. Technical and financial assistance in the installation of works of improvement specified in approved subwatershed work plans:

a. Structural measures: This work includes the installation of structural measures for flood prevention and water management such as floodwater retarding structures, stream channel improvement, stabilizing and sediment control structures, irrigation reservoirs and canals, etc. Detailed construction plans, designs, and specifications are prepared for these measures by the Department. The Department usually does the contracting and bears all of the construction cost of structural measures for flood prevention and up to 50 percent of the cost of works of improvement for agricultural water management and for fish and wildlife or recreational development including the cost of minimum basic facilities for public health and safety and access to the area. Local organizations must pay all costs of works of improvement for other purposes. In addition local organizations must acquire water rights and furnish land, easements, and rights-of-way for all structural measures except that the Federal government may pay up to one-half the cost of land, easements, and rights-of-way allocated to fish and wildlife and recreation. Local organizations must also operate and maintain the completed works of improvement.

In addition to loans and advancements made under Section 8 of Public Law 566, 83rd Congress (as amended), advances may be made to local organizations from construction funds under Section 4 of the Act to provide for immediate acquisition of land, easements, and rights-of-way to prevent encroachment by other developments, and to provide for additional storage of water to meet anticipated future demands for municipal and industrial uses. In each case, advances must be repaid with interest. Advances for immediate acquisition of structure sites must be repaid before construction starts for credit to construction funds.

Engineering assistance is provided by the Department for flood prevention, agricultural water management, and for water resource improvements for fish and wildlife and recreational purposes. The Department may also supply up to one-half the cost of engineering assistance required in connection with installation of minimum basic facilities for fish and wildlife and recreational development.

b. Land treatment measures: The Department furnishes farmers and ranchers the technical assistance needed to speed up the installation of land treatment measures to achieve required protection of structural measures constructed in subwatersheds. This supplements technical assistance available under other conservation programs.

Certain types of land treatment measures are required to be installed under this program to achieve justified offsite flood prevention benefits. Such measures provide little or no benefit, or such long-deferred benefits to the landowner that he cannot be expected to pay a substantial part of the cost of their installation on his farm. The Federal government may pay part or all of the cost of installing these special measures. Measures eligible for this assistance are intensified fire prevention; stabilization of critical areas; minor gully, streambank, and grade stabilization structures; and other on-farm measures which may be used in lieu of installing downstream flood prevention structures. The Department may furnish vegetative planting and other materials to landowners for establishment of these essential measures or it may contract the required work or do it by force account.

3. Making loans to local organizations to finance the local share of the costs of installing planned works of improvement for flood prevention and for the conservation, development, utilization, and disposal of water, including development of fish and wildlife and recreational facilities, and municipal and industrial water supplies. Repayment with interest is required within fifty years after the principal benefits of improvements first become available.

Proposed improvements by the Department are correlated with mainstream work installed by the Corps of Engineers, the Bureau of Reclamation, and others, in addition to providing protection to the watershed lands and property above the mainstream works. Maintenance of installed measures is the key to the long-term effectiveness of the watershed improvement programs. Land owners and operators generally maintain those land treatment measures which benefit primarily the lands upon which they are installed. Local units of government have the responsibility to maintain structural measures for flood prevention and water management which provide primarily off-site benefits.

Program Assignments

The Soil Conservation Service has general responsibility for administration of the work of the Department of Agriculture authorized under the Flood Control Acts. The Soil Conservation Service and the Forest Service carry out the planning and installation of land treatment measures and structural works of improvement in the authorized watersheds. The Forest Service is concerned with (a) national forests and other lands in the authorized watersheds which they administer, (b) all range land in or adjacent to national

forests which is used in conjunction with such forests under formal agreement with the landowner, and (c) certain specialized technical assistance on other forest lands within the watersheds. The Soil Conservation Service is concerned with all other private and public lands in the watersheds.

The Farmers Home Administration is responsible for carrying out the authority to make loans or advancements under Sections 4 and 8 of Public Law 566, 83rd Congress (as amended). No loans or advancements may be made under these provisions until the Soil Conservation Service and the local organization have agreed on a plan for works of improvement.

The Economic Research Service is making an appraisal of the economic impacts of the flood prevention program in the Washita River Basin.

Selected Examples of Recent Progress:

WORKS OF IMPROVEMENT

Allocation of Funds by Agency

Funds available for the planning and installation of works of improvement and for loans are allocated as follows:

Agency	: 1962 : Obligations	: 1963 : Estimate	: 1964 : Estimate
Soil Conservation Service	\$20,383,408	\$24,510,792	\$20,750,000
Economic Research Service	26,876	31,000	33,000
Farmers Home Administration ...	205,500	1,794,500	1,000,000
Forest Service	2,711,120	2,977,425	3,493,000
Emergency Measures a/	30,168	300,000	300,000
Total	23,357,072	29,613,717 b/	25,576,000

a/ Under authority of Section 216 of the Flood Control Act of 1950, not to exceed \$300,000 may be expended each fiscal year for emergency measures when a fire, flood or any other natural element or force has caused a sudden impairment of a watershed. Any balances not needed for these purposes are distributed late in the fiscal year to the watershed(s) where the greatest need exists and where the local sponsoring organizations have provided lands, easements, and rights-of-way required for installation of additional works of improvement.

b/ Includes \$4,270,717 unobligated balances brought forward from fiscal year 1962, and \$343,000 proposed supplemental for pay act costs.

The following table provides a breakdown by watershed of the allocation for the fiscal years 1963 and 1964.

Watershed	1963 Funds Available			1964 Budget Estimate		
	Agency Distribution			Agency Distribution		
	SCS	FS	Total	SCS	FS	Total
1. Buffalo Creek, NY	\$548,640	\$6,908	\$555,548	--	--	--
2. Colorado (Middle) Texas	1,980,400	--	1,980,400	\$1,841,900	--	\$1,841,900
3. Coosa, Ga., Tenn.	1,575,056	88,548	1,663,604	1,289,300	\$48,400	1,337,700
4. Little Sioux Iowa, Minn.	1,763,674	--	1,763,674	1,313,900	--	1,313,900
5. Little Tallahatchie, Miss.	1,525,818	423,262	1,949,080	1,056,000	383,000	1,439,000
6. Los Angeles, California	484,068	1,324,057	1,808,125	168,800	1,728,900	1,897,700
7. Potomac, Md., Va., Pa., W.Va.	2,635,794	109,497	2,745,291	2,027,200	106,000	2,133,200
8. Santa Ynez California	1,009,458	182,172	1,191,630	295,700	410,700	706,400
9. Trinity, Texas	4,359,888	--	4,359,888	4,400,200	--	4,400,200
10. Washita, Okla., Texas ^{a/}	5,551,623	2,640	5,554,263	5,485,900	2,700	5,488,600
11. Yazoo, Miss.	3,107,373	840,341	3,947,714	2,904,100	813,300	3,717,400
Total ^{b/}	24,541,792	2,977,425	27,519,217	20,783,000	3,493,000	24,276,000

a/ Amounts shown as available to the Soil Conservation Service include allotments of \$31,000 in 1963 and \$33,000 in 1964 to the Economic Research Service for evaluation studies in the Washita River Flood Prevention Project.

b/ Excludes amounts for loans and Emergency Measures.

Subwatershed Work Plans

To provide consistency between the Flood Prevention and the Watershed Protection programs of the Department, which have similar objectives, the planning criteria, economic justifications, local sponsorship requirements, cost-sharing, structural limitations and other procedures and policies used in the Flood Prevention program have been adjusted to generally parallel those of the Watershed Protection program. Because of the size of the 11 authorized flood prevention projects, procedures provide for development of work plans on a subwatershed basis. As of June 30, 1962, work plans had been developed for 17,944,000 acres, or about 58 percent of the 30,997,037 acres in the authorized portions of the 11 watersheds. During 1962, 14 work plans were developed which covered 789,692 acres.

Soil Surveys and Conservation Plans in Flood Prevention Projects

The following table shows the acres surveyed and conservation plans prepared in the 1962 fiscal year with Flood Prevention funds and estimates for 1963 and 1964:

Item	: 1962 : Actual	: 1963 : Estimate	: 1964 : Estimate
Soil surveys (acres)	: 626,038	: 650,000	: 660,000
Total number cooperators	: 3,055	: 3,150	: 3,200
Basic conservation plans:	:	:	:
Number	: 3,080	: 3,200	: 3,250
Acres	: 666,180	: 690,000	: 700,000

The following table shows the acres surveyed and conservation plans prepared cumulative through June 30, 1962, with both Flood Prevention and Conservation Operations funds:

Item	: Flood : Prevention : Funds	: Conservation : Operations : Funds	: Grand : Total
Soil surveys (acres)	: 4,374,211	: 10,045,505	: 14,419,716
Total number cooperators	: 40,661	: 37,678	: 78,339
Basic conservation plans:	:	:	:
Number	: 31,757	: 28,454	: 60,211
Acres	: 6,578,265	: 5,869,338	: 12,447,603

Works of Improvement Installed in Flood Prevention Projects

The following table shows the works of improvement installed in the 11 authorized flood prevention watersheds in the fiscal year 1962 with Flood Prevention funds and estimates for 1963 and 1964:

Works of Improvement	Unit	1962 Actual	1963 Estimate	1964 Estimate
<u>Structural Measures:</u>				
Floodwater retarding				
structures	No.	163	200	170
Grade stabilization				
structures	No.	330	375	350
Debris basins	No.	10	15	15
Channel stabilization	Miles	6	10	6
Channel improvement	Miles	19	25	20
Levees and dikes	Miles	0.2	1	--
Roadside erosion				
control	Miles	6	10	5
Critical area planting	Acres	23,185	27,500	23,500
<u>Land Treatment Measures:</u>				
Contour farming	Acres	221,646	250,000	225,000
Cover cropping	Acres	160,886	190,000	165,000
Crop residue				
utilization	Acres	342,973	400,000	350,000
Debris basins *	No.	591	600	600
Diversion construction	Miles	96	110	110
Structures for water				
control	No.	5	7	5
Pasture planting	Acres	78,592	90,000	80,000
Pond construction	No.	303	500	400
Range seeding	Acres	9,304	11,000	9,500
Stripcropping	Acres	1,825	2,200	1,800
Stubble mulching	Acres	13,427	16,000	13,500
Terracing	Miles	495	750	500
Tree planting	Acres	1,401	7,000	1,400
Waterway development	Acres	793	950	800
Wildlife development	Acres	1,388	1,200	1,400
Woodland planting	Acres	735	1,000	750
Intermediate cutting	Acres	2,128	2,500	2,200
<u>Forest Fire Control:</u>				
Fire control roads,				
trails, and fire breaks	Miles	25	30	35
Structures	No.	4	6	10
Heliports and Helispots	No.	11	10	10
Mobile equipment	No.	7	5	10
Permanent radio				
installations	No.	34	10	15

* Includes some basins constructed as structural measures.

Progress in Individual Projects

A description of the conservation work being accomplished in each of the 11 authorized flood prevention watersheds follows (the estimated Federal cost for each watershed reflects 1960 prices, as adjusted to reflect installation of fish and wildlife and recreational developments and future water supplies under provisions of recent amendments to the Watershed Protection and Flood Prevention Act (76 Stat 608-610))

Buffalo Creek Watershed, New York

Estimated total Federal cost	\$4,717,185
Total obligations through June 30, 1962	4,167,967

The Buffalo Creek project was authorized for operations December 22, 1944, and is estimated to be completed in the fiscal year 1964. The project covers 279,680 acres in Erie and Wyoming Counties, including 13,440 acres within the city of Buffalo. The Erie-Wyoming Soil Conservation District Joint Board sponsored the project which is composed of 95 percent privately owned lands and 5 percent public forest. The principal purpose of the project is to reduce siltation in the Buffalo River portion of Buffalo Harbor by controlling stream-bank and farmland erosion. About 44 percent of the watershed is cropland, 19 percent pasture, 10 percent idle, 20 percent woodland, and 6 percent roads, urban, etc.

Of the 4,000 or more landowners in the watershed, 842 were soil conservation district cooperators as of June 30, 1962. Land treatment accomplishments to June 30, 1962, include installation of 24,321 acres conservation cropping systems; 11,081 acres hayland planting; 10,367 acres tree planting; 8,532 acres pasture planting; 4,649 acres stripcropping; and 578 farm ponds. About \$20,000 was allocated in the 1962 fiscal year from special reserve Agricultural Conservation Program funds for accelerated land treatment. The Forest Service in 1962 in cooperation with the New York State Conservation Department completed 3 forest management plans, 576 acres tree planting, 91 timber stand improvement markings, and 265 acres harvest markings.

As of June 30, 1962, about 53 miles of the channels of Buffalo Creek and Cazenovia Creek had been stabilized by 633,450 cubic yards of earth excavation; 355,432 cubic yards of fill embankment and training dikes; and 282,373 square yards of riprap. One rock-filled concrete crib dam has been constructed as a stream gradient control measure.

Middle Colorado River Watershed, Texas

Estimated total Federal cost	\$34,956,957
Total obligations through June 30, 1962	13,013,648

The Colorado River Project includes approximately 4,613,000 acres of the middle section of the Colorado River Watershed of Texas, comprising 14 sub-watershed areas delineated for purposes of work plan development. The principal problems in the watershed are floodwater and sediment damages to agricultural lands. Practically all of the agricultural land in the watershed is privately owned. The sponsors of the project are the local soil conservation districts, and in some instances, county governments.

As of June 30, 1962, about 3,124,400 acres were included in 4,709 farm and ranch units cooperating with local soil conservation districts within the Middle Colorado River Watershed. Basic conservation plans had been prepared for 4,047 of these units covering 2,717,184 acres. In Mukewater Creek, 196 miles of the 280 miles of needed terraces have been built and 3,900 of the 5,600 acres of needed contour farming have been completed. In Brady Creek watershed, 1,343 of the 1,840 miles of terraces needed have been completed, and contour farming has been applied on 42,000 acres of the 52,000 acres needed. Throughout the area needed treatment measures have been given priority for Agricultural Conservation Program and Great Plains Conservation Program assistance.

Construction had been completed on 97 floodwater retarding structures as of June 30, 1962. Vegetative work had been completed on 55 of the structures and the local sponsors had assumed full responsibility for operation and maintenance. Six miles of channel improvement have been completed and contracts let for 16 additional floodwater retarding structures including the multiple-purpose reservoir being built jointly by the Service and the City of Brady, Texas. The contract cost of the multiple-purpose reservoir was \$1,044,277, of which the Federal share was \$849,836. The Farmers Home Administration made a loan in the amount of \$1,570,000 to the City of Brady to finance the local share of construction costs, costs of lands, easements, and rights-of-way, etc. Floodwater detention capacity in the multiple-purpose reservoir is 60,000 acre-feet excluding 24,000 acre-feet municipal water storage. Twenty floodwater retarding structures are scheduled for construction in fiscal year 1963, at an estimated Federal cost of \$1,070,868.

Six County Commissioner Courts have agreed to cosponsor projects to assist soil conservation districts and other local sponsors in securing land rights and in carrying out their responsibility for operation and maintenance of structural measures. In the six subwatersheds in operation at the present time, 59 structure sites remain to be cleared for construction. Of the 373 easements or permits required to clear these sites, 84 had been secured as of June 30, 1962.

The land treatment and structural measures installed have proven their effectiveness by preventing damage to growing crops, pastures, livestock, roads and fences during rains of moderate to high intensity during the spring of 1962. In October 1961, up to 10 inches of rain fell in about 10 hours in upper reaches of Brady Creek. Installed structures functioned as designed and protected floodplain areas, fences, roads and other improvements located downstream. On unprotected floodplain of nearby streams, damages were extensive.

Coosa River Watershed, Georgia and Tennessee

Estimated total Federal cost	\$10,941,981
Total obligations through June 30, 1962	5,796,562

Work began on this project in 1946. It covers approximately 1,339,400 acres and is divided into 17 subwatersheds for planning and applying the watershed program. Approximately 85 percent is privately owned and 130,350 acres is national forestland. It is sponsored by the four soil conservation districts

in the watershed. The principal problems in the project area are erosion, floodwater and sediment damage to agricultural lands, county roads, and other improvements.

Subwatershed work plans had been completed on 16 of the subwatersheds as of June 30, 1962. Planned land treatment has progressed on schedule in the 16 subwatersheds. Of the approximately 6,229 operating units in these subwatersheds, 4,340 were district cooperators as of June 30, 1962. Basic farm conservation plans had been completed by 3,956 owners. Land treatment work was less than 25 percent complete in only two subwatersheds, 25 to 50 percent complete in five, 50 to 75 percent complete in five others, and over 75 percent complete in four.

During the 1962 fiscal year, 17 floodwater structures were completed and 10 more were contracted. To June 30, 1962, 63 floodwater retarding structures had been completed. Stream channel improvement had been completed on 43 miles of channel and 331 miles of roadside erosion control had been established.

The installations of land treatment and structural measures have been tested and found effective. During February of 1961, several subwatersheds of the Coosa were tested by rains of an estimated 25 year frequency. From 10 to 14 inches fell in a six-day period with approximately 5 inches in one 8 hour period. In the Settingdown Creek Subwatershed 90 percent of the land treatment measures and all of the structural measures had been completed at this time. The project saved an estimated \$2,500 in damage to fences, \$16,000 in damage to bridges, and \$11,400 in damage to pastures. The Pumpkinvine Creek subwatershed suffered little damage from floodwater or sediment below the nine completed floodwater retarding structures. However, extensive damage to pastures and fences occurred in the untreated areas of the project. It was also estimated that five bridges crossing Noonday Creek were saved by five completed structures of the thirteen planned in that subwatershed.

Little Sioux River Watershed, Iowa and Minnesota

Estimated total Federal cost	\$33,513,313
Total obligations through June 30, 1962	12,696,108

The Little Sioux Project is 135 miles long and its greatest width is 50 miles. It extends from southwest Minnesota to a point of confluence with the Missouri midway between Sioux City and Omaha and contains about 2,880,000 acres of which 1,740,800 are authorized for assistance under the flood prevention program. The soils of the area are of loessial origin; wind-deposited materials are commonly found in depths of 25 to 50 feet, and frequently 100 feet or more. Although highly productive, these soils are very susceptible to sheet and gully erosion. Gullies of 20 to 40 feet in depth are common and in some instances they have developed to depths of 50 feet and more. Land voiding and other damages resulting from gully erosion are greatly affecting the economy of many farm units in both the uplands and the bottom lands which lie in the Missouri River floodplain. The most productive areas of the upland farms are being destroyed by gully erosion. Crops in the 200,000 acre floodplain are frequently damaged by flooding, and channels of the complex drainage system are choked by deposits of sediment.

Eight soil conservation districts are principally concerned with and four other districts have some interest in the authorized flood prevention program. All are represented on the Little Sioux Works Committee which provides overall guidance for execution of the program and establishes priorities for the work. Fifty-one subwatershed work plans had been prepared and approved covering 105,108 acres as of June 30, 1962. All work had been completed in 47 of these as of this same date. Two subwatersheds were under construction and work plans were being prepared on two others.

Structural measures installed as of June 30, 1962, include 234 floodwater retarding structures, 322 sediment control and gully stabilizing structures, 347 acres of grassed waterways, 66 miles of channel improvement, 22 miles of diversions, 15 miles of dike construction, and 11 miles of floodways. About 904 miles of detention terraces have been installed.

Of the 8,400 operating units in the authorized part of this watershed, 4,439 were cooperating in their soil conservation district programs as of June 30, 1962. These cooperators had developed 3,151 basic farm conservation plans, comprising 615,219 acres. The major land treatment measures applied include 390,489 acres of contour farming, 327 erosion control structures, 3,543 miles of terraces, and 6,705 acres of grassed waterways.

The project installations have proven very effective. A 10-inch rainstorm of August 8, 1961, provided an unusual test of flood prevention measures and farm conservation practices in the Fee subwatershed two miles north-east of Washta, Iowa. A 10x8' road culvert at the lower extremities of this completed 918-acre subwatershed and an 8x8' road culvert at the lower extremities of a 340-acre untreated adjacent watershed provided a means for comparing peak flow stages produced by the 10-inch rainstorm. It produced an estimated peak flow of 410 cubic feet per second from the Fee watershed, a reduction of 80 percent from the normal peak runoff expected from an untreated watershed of this size. The calculated peak flow at the 8x8' culvert below the 340-acre untreated watershed was 1,020 cubic feet per second, 12 feet above culvert flow, and the road was overtopped by 6 to 8 inches.

Flood prevention measures in the Fee subwatershed include 2 detention structures, 30 miles of cropland terraces, vegetated watercourses, good land use and crop rotations. Field inspections after the storm showed that farm conservation practices and structural measures held up exceptionally well during the storm. The performance of the Fee subwatershed improvements under this 10-inch rainstorm demonstrated the value of small watershed projects. Some farmers who had been hesitant to install all of the terraces originally recommended for their farms decided to install the additional terraces needed after the storm.

Peak flows were compared in May 1962 in the West Fork tributary channel where only a small amount of conservation work has been installed and on the treated Wolf Creek watershed main stem. The West Fork overflowed while Wolf Creek was observed at no more than 50 percent capacity when at peak stage. An estimated 35 to 40 percent of the total needed land treatment and structural measures in Wolf Creek has been applied. The apparent peak flow reduction in the Wolf Creek watershed has gained considerable favorable comment and support from local people. Fringe benefits of various

types are being reported. In the 12-month period ending June 30, 1962, four landowners reported that abandoned wells had come back into good production since the watershed program was carried out. Local reports also indicate increased interest in the recreational value of floodwater retarding and other dams.

Little Tallahatchie River Watershed, Mississippi

Estimated total Federal cost	\$20,729,705
Total obligations through June 30, 1962	9,275,403

The Little Tallahatchie River Project includes 963,977 acres in north central Mississippi. About 80 percent of the land area is privately owned, 10 percent in national forest, and 10 percent devoted to Sardis Reservoir. The project is divided into 16 subwatersheds for the purpose of making work plans and carrying out operations. These subwatersheds are sponsored by a water management district organized for each subwatershed and the Tallahatchie River Soil Conservation District. The principal problems in the watershed are floodwater and sediment damages to agricultural lands. About 45 percent of the watershed is woodland, 25 percent cropland, 9 percent in pasture, and 21 percent idle or miscellaneous uses.

There are 6,387 operating units in the project area of which 4,827 had become district cooperators and 3,460 had developed basic farm conservation plans as of June 30, 1962. It is estimated that more than 55 percent of the planned land treatment measures had been applied as of this date. Conservation rotations had been established on 123,858 acres; pasture planting on 83,962 acres; grasses, legumes, and tree planting on approximately 127,784 acres of critical land; 582 miles of roadside erosion control; and 466 miles of diversions.

Thirty-nine of the 84 floodwater retarding structures planned in subwatershed plans had been constructed as of June 30, 1962, and 11 floodwater retarding structures were under contract. Eight floodwater retarding structures were ready for contracting early in the 1963 fiscal year. Two hundred eighty-one miles of channel improvement had been completed. Two subwatersheds had completed all the structural measures planned and 90 percent of all the land treatment measures. Easements and rights-of-way valued at \$250,000 have been obtained from 261 landowners. This work has been done by the water management district commissioners for each of the subwatersheds in operation. These easements and rights-of-way cover all the structures completed through 1962 and some that are to be constructed during the 1963 fiscal year.

The project installations have proven effective in many ways. Over 375 landowners, who own 18,000 acres of floodplain land on the main stem of the Tallahatchie River in Union County, have benefited from the construction of 30 miles of channel improvements. The completion of the 15,802 acre Greasy Creek subwatershed project, consisting largely of 14 floodwater and sediment structures and treatment of about 4,000 acres of critical sediment producing areas, has resulted in eliminating \$40,000 damages that normally occur each year. Over 3,000 acres of fertile floodplain land in the 17,000 acre Cane Creek Minor Watershed in Tippah County have been brought into high production after improvements on 12 miles of the main creek channel. Also, over two million pine seedlings were planted in the watershed to stabilize gullied areas. Over 1,000 acres of fertile floodplain land in Upper Tallahatchie River,

Tippah County, have been brought into high-value crops since five floodwater retarding structures and five miles of channel improvement were constructed in 1957. Although this stream was often severely flooded prior to 1957, very little flooding has occurred since then.

Los Angeles River Watershed, California

Estimated total Federal cost	\$48,435,349
Total obligations through June 30, 1962	15,691,648

The Los Angeles River Project covers 536,960 acres, of which 73 percent is privately owned and 27 percent is Federal land in the Angeles National Forest. The Department of Agriculture is cooperating with the Los Angeles Flood Control District in the development of this project. Flood prevention works of improvement on private lands are carried out through the Soil Conservation Service and those on Federal lands by the Forest Service. The upstream works of improvement being installed supplement the improvements being made by the Corps of Engineers on the principal river channels.

This watershed is characterized by high intensity rainstorms of short duration. Erosion in the watershed is severe during peak runoff and the sediment is deposited on the relatively flat valley floor during flood flows. Channel capacity from the steep canyons to the Los Angeles River is very poor and of inadequate size for normal winter runoff in most cases. When the project was authorized, about 22 percent or 116,065 acres were devoted to agriculture and grazing, however, there has been a material increase in urban development of the area in recent years with a corresponding decrease in agricultural use. For that reason most of the land treatment now in progress consists mainly of street and storm drains planned and constructed by local agencies.

Structural measures completed as of June 30, 1962, on the private land portion of the watershed include 234 grade stabilization structures, 13 miles of streambank and channel stabilization, 31 miles of channel capacity improvement, 4 miles of waterway improvement, 8 stabilization and sediment control structures, and one desilting basin. Plans and design for the 2nd Unit of Limekiln Creek, involving 1.5 miles of concrete lined channel with a debris dam and basin, and for Santa Susana Creek, involving 1.8 miles of channel, were being prepared by Service personnel as of June 30, 1962.

Work done in the Angeles National Forest by the Forest Service during the 1962 fiscal year includes the completion of seven channel stabilization structures in Santa Anita Canyon and 17 in Sawpit Canyon. These installations necessitated the construction of about two miles of access road. Three other structures were installed in Sycamore Canyon with transportation of materials by helicopter. Channel clearing in Arroyo Seco from Devils Gate reservoir to Brown's Canyon barrier was cooperatively accomplished with the County Flood Control District and the City of Pasadena, at a total cost of \$12,000 of which \$3,500 was the Federal share. As a result of the Sierra Madre Mountain fires an emergency drainage channel was installed above Sierra Madre to divert debris flows from Hastings Canyon. This work was accomplished through cooperation with the County Flood Control District with equal cost-sharing between the County and Federal Government.

Although design storms have not occurred subsequent to completion of the various structures, there is much evidence which indicates the effectiveness of the measures installed. Runoff, which normally overtopped natural channels and resulted in considerable damage, is now being safely carried to the Los Angeles River and flood control basins installed. The channel improvement works constructed under this program have proven to be adequate for the area served. More than 10 inches of rainfall was recorded at San Fernando during the period February 7 - 12, 1962, inclusive, 3.37 inches occurring on February 11th. Storm water runoff from this storm was adequately handled by all improvements previously completed under the program.

Potomac River Watershed, Md., Pa., Va., W. Va.

Estimated total Federal cost	\$31,550,308
Total obligations through June 30, 1962	6,190,483

The authorized area of the Potomac River Project covers 4,205,400 acres in parts of four States. Four subwatersheds comprising 239,305 acres in Virginia and three comprising 224,820 acres in West Virginia had been approved for installation of planned works of improvement as of June 30, 1962. Subwatershed planning has been confined mainly to the Upper Potomac River tributaries in these two States. The principal problems are flooding and sedimentation of agricultural lands and floodwater damage to towns, highways, and bridges.

In 1962 a supplement to the Upper North River subwatershed plan was approved making the City of Staunton, Virginia, a local sponsoring organization along with the Shenandoah Valley Soil Conservation District. The supplement provides for extra water to be stored above one of the structures to supplement the present water supply of the City of Staunton. Also approved in 1962 was a supplement to the plan for the South River subwatershed which includes a combination flood control and water supply structure on Mills Creek. A contract has been let for this structure and construction started in early July 1962. This dual purpose structure is being constructed in cooperation with Augusta County to provide additional water supplies for residents in the eastern part of the county. The application of land treatment and structural measures is being accelerated on most of the private and public lands in the project area.

All phases of the project called for in the plan for the 5,130 acre Gap Run subwatershed in Virginia were completed in June of 1962. A diversion, grade control structures, and channel grading and improvements designed to carry high water flows safely past the community of Yancey have been established. The drop inlet for grade control, designed as an important part of a bridge replacement where a State road crosses the channel, was completed as a cooperative project with the Virginia Highway Department. Three severe storms since the completion of the project have resulted in no damage to nearby homes and other property.

The primary problem in the 67,961 acre Upper North River subwatershed of Virginia is damage from floodwater and sedimentation. Three floodwater retarding structures in the National Forest are proposed. Stream channel work is proposed below these structures and stream bank and stabilization measures are planned above one of the structures on the main stem of the

North River. About 85 percent of the planned land treatment measures had been applied as of June 30, 1962. There are 132 farms in the project and of these, 96 were district cooperators and 89 had developed basic plans.

Construction has been completed on eleven floodwater retarding structures in the 156,700 acre South River subwatershed in Virginia as of June 30, 1962. Every one of these structures in addition to floodwater retardation, is serving a greatly needed recreational use. Channel work consisting of clearing and snagging along a portion of Upper South River, has been completed for a distance of approximately 12 miles. There are approximately 19,500 acres of grass land in the watershed. More than 65 percent of the planned land treatment measures have been applied. Of the 725 farms in the watershed, 405 are district cooperators and 347 have basic plans.

Installation of land treatment measures in the 36,208 acre New Creek-Whites Run subwatershed in West Virginia was about 70 percent complete as of June 30, 1962. Five of the twelve planned floodwater retarding structures had been completed, and over 80 percent of the planned land treatment measures had been installed in the 184,852 acre South Fork subwatershed. Construction was ahead of schedule. Six floodwater retarding structures had been completed as of June 30, 1962, and four more were under construction. One of the structures in the George Washington National Forest has been developed for recreational use. All work was completed in the 7,264 acre Warm Springs Run subwatershed in 1962. The amount of land treatment measures installed did not meet original goals. However, the general discontinuance of farming in the area has resulted in substantial natural reforestation. Eight of the nine floodwater retarding structures planned were installed.

Forest Service accomplishments to June 30, 1962, on private lands consists of 56.6 miles of skid trail and logging road erosion control, 2,455,000 trees planted on 2,847.8 acres (143.8 acres critical areas), 8,460 acres of woodland grazing control (46.8 miles of fencing), 18,009 acres timber marked for improvement or harvest, and 18,001 acres harvested, 4,565 acres of hydrologic stand improvement, and 1,652 forest management plans prepared involving 120,986 acres. Technical assistance has been provided to 1,652 landowners and 895 timber operators. The main accomplishments to date on Federal lands include 3.1 miles of stream channel stabilization and 37.6 acres of slide stabilization.

Santa Ynez River Watershed, California

Estimated total Federal cost	\$10,718,000
Total obligations through June 30, 1962	4,533,984

The Santa Ynez Project covers 576,000 acres, of which about 10 percent is in subwatersheds in the westerly portion of the basin where the Soil Conservation Service is currently installing works of improvement. Work in this portion of the watershed is scheduled for completion in the fiscal year 1964. Forest Service activities are concerned with fire prevention and control and installation of land treatment measures in national forest and other forested areas in the mountainous western portion of the watershed. Work in this portion is scheduled for completion by 1971.

A major problem in the project area is floodwater damage to farm lands which are intensively used for vegetable and flower seed production. Flood flows also cause damage to homes, highways, railroads, and multi-million dollar defense installations. Structural measures are designed to prevent degrading of entrenched gullies and to confine floodwater to improved channels across the flood plains. Land treatment measures, including fire prevention, are applied to prevent erosion and to improve soil fertility.

More than 95 percent of the planned land treatment measures had been applied as of June 30, 1962. Of the 267 operating farms in the subwatersheds, 168 were district cooperators and 144 had developed basic conservation plans for their land as of this same date. The more significant land treatment measures installed to June 30, 1962, include 40 miles of terraces, 402 drop spillways, 14,483 acres of cover cropping, 55,511 acres of properly managed range land and 178 farm ponds.

Planned structural measures on six of the nine subwatersheds had been completed as of June 30, 1962, and work was underway on the seventh. Measures completed as of this date include 14 miles of floodwater diversions, 120 channel stabilization structures, 6 debris basins, 3 miles of streambank protection, 3.7 miles of stream channel stabilization, 6.2 miles of stream channel improvement, 127 acres of critical area planting, and 14 miles of diversions. Easements and rights-of-way valued at \$116,090 have been recorded for 58 parcels of land for structural measures installed by the local sponsors to June 30, 1962. Easements and rights-of-way for the Rodeo-San Pasqual subwatershed were secured by the local sponsors at a cost of \$88,100. In addition, the moving of utilities, construction of bridges and other non-Federal costs are estimated at \$263,700. Federal construction contracts were let for 4.1 miles of reinforced concrete channel, a debris basin and inlet and outlet structures in the fiscal year 1962. The floodway when completed will provide protection for valuable farm lands in the lower valley and a portion of the Pacific Missile Range of the Navy.

Operation and maintenance of the planned fire prevention and control program continued to be a major accomplishment of the Forest Service during the fiscal year 1962. When not on fire assignments, operation personnel aided in construction and maintained 12 miles of fire breaks, 32 miles of fire-lane, 34 helispots, 1 heliport, 34.5 miles of trails and 57 miles of telephone line.

In February 1962, rainfall reached 10 to 15 inches in a 20 day period. These storms tested the adequacy of all structures presently installed and the need for those now being installed on the Rodeo-San Pasqual subwatershed. Ranchers are able to raise truck crops on fields formerly inundated, and farm to town arteries have been kept open and free from water and debris.

Trinity River Watershed, Texas

Estimated total Federal cost	\$92,600,889
Total obligations through June 30, 1962	32,413,736

The authorized area of the Trinity River Project consists of the upper 8,424,260 acres of the Trinity River watershed and is divided into 54 subwatersheds for work plan development and project installation. The

principal problems are floodwater and sediment damage to agricultural lands, practically all of which are privately owned. Sponsors are the local soil conservation districts and, in most instances, county units of government. As of June 30, 1962, about 26,250 farmers and ranchers in the authorized portion of the Trinity basin were cooperating with local soil conservation districts. About 20,750 of these had developed basic conservation plans covering about 4,225,000 acres. As of June 30, 1962, over 64 percent of the planned land treatment measures had been applied and, as of that date, construction had been completed on 324 floodwater retarding structures at a Federal cost of \$15,091,800. Vegetative work had been completed on 212 of the structures and the local sponsors had assumed full responsibility for operation and maintenance. Contracts in the amount of \$2,201,946 had been let on 56 additional floodwater retarding structures, 9 sediment control structures, and 17 miles of channel improvement. Seventy-two floodwater retarding structures are scheduled for construction in fiscal year 1963, at an estimated Federal cost of \$2,126,581.

Good progress continues to be made by local sponsors in obtaining land rights needed for installation of planned structural works of improvement. Additional assistance has been made available in an effort to accelerate this activity by assigning Service personnel to work as land rights specialists in furnishing direct technical assistance to local sponsors in obtaining land rights. Eighteen County Commissioner Courts have entered into agreements to co-sponsor projects, to assist in securing land rights for structural measures, and operation and maintenance of completed projects. In the 20 subwatersheds in operation at the present time, 600 structure sites remain to be cleared for construction. Of the 3,354 easements and/or permits required to clear these sites, 850 have been obtained to date.

As a result of 4 inches of rain falling in a 24-hour period in 1961, considerable flooding occurred on Brushy Creek, an untreated tributary, causing damage to cropland, fences, roads, and bridges. The adjoining subwatershed had no flooding due to the effectiveness of the installed land treatment and structural measures. In another untreated watershed a four inch rain, when the soil was saturated, damaged or destroyed seven bridges and 3,000 feet of county road. The county commissioners estimated the damage to be in excess of \$10,000. Turkey Creek subwatershed, in the same general area, had approximately the same amount of rain but very little flooding and no road and bridge damage occurred due to the effectiveness of the installed measures.

Washita River Watershed, Oklahoma and Texas

Estimated total Federal cost	\$74,950,559
Total obligations through June 30, 1962	33,831,313

The authorized area of the Washita River Flood Prevention Project covers 5,095,040 acres which has been divided into 64 subwatersheds for purposes of work plan development, local participation, and project operations. About 94 percent of the authorized area is in Oklahoma and 6 percent in Texas.

The Texas portion was approved for operations in July 1959 and is scheduled for completion in the fiscal year 1965. Local sponsors of each subwatershed are Soil and Water Conservation Districts, Watershed Associations, County Commissioner's Courts, and City Councils. Guidance is furnished by the Washita Council. The problems include upland erosion and floodwater damages on 265,000 acres of bottomland. There are 112,000 acres along the main stem of the Washita needing protection. Work plans for each subwatershed project include installation of land treatment and structural measures. The structures are floodwater retardation and multipurpose reservoirs and channel improvement work. Severely eroded areas are treated with land stabilization practices. Storage is provided for irrigation, fish and wildlife, and municipal water supply in some reservoirs.

In the Washita watershed, as of June 30, 1962, about 71 percent of the farmers and ranchers in the Oklahoma portion and 63 percent of those in the Texas portion of the watershed had developed soil conservation plans with their local district. About two-thirds of the needed soil conservation practices had been applied on the land in Oklahoma and 78 percent of those needed in Texas. More than 50,000 acres of formerly cultivated land were planted to grasses in Oklahoma in 1962. Permanent conservation practices are being applied, such as terraces, diversions, and waterways, legumes for soil building, and stubble mulch tillage for soil protection. Proper range use is receiving special emphasis.

Subwatershed work plans had been completed on about 80 percent of the entire authorized Washita drainage areas as of June 30, 1962. Nine hundred and forty-four floodwater retardation dams, 76 miles of channel improvement and 140 land stabilization structures had been planned. Almost one-half (433) of the planned dams had as of June 30, 1962, been built. There were in addition 65 dams under construction. All structures on 24 subwatersheds have either been completed or were under contract. One hundred and twenty-three land stabilization structures are built.

The program will be completed in the current year on an area of almost one million acres upstream from Foss Reservoir. The eleven tributary projects of land treatment measures and 207 floodwater retarding structures protect 51,839 acres of bottomland. The average yearly benefits are \$616,060. Construction work is almost finished on four other watersheds immediately below Foss Reservoir. These total over 300,000 acres. By the end of the current fiscal year, the upper 25 percent of the Washita will be completed.

Beginning at the upper reaches of the Washita, the Supplement to Subwatershed Work Plans of Washita River Watershed in Oklahoma above Foss Reservoir called for 25 sites on 11 subwatersheds. These sites have all been cleared, with but minor exceptions, and construction is scheduled for fiscal year 1963. The eighteen additional sites on the revised Whiteshield Creek Project have been cleared and the subwatershed scheduled for construction in fiscal year 1963. The Beaver Creek work plan called for 13 sites. Seven sites are clear. The owners on the flood plain have pledged \$14,000 to obtain hardship easements. A drive to clear easements on Bear Creek with 15 Structure sites

requiring 55 separate easements was scheduled for the fall of 1962. The Boggy Creek plan called for 36 structure sites with 89 separate easements of which 46 have been signed. The sponsors' goals are to have the entire watershed cleared for construction by 1964. The Rainy Mountain Creek watershed plan calls for 41 sites with 214 separate easements. The sponsors plan to have easements cleared and the watershed ready for some construction in fiscal year 1964. The Sugar Creek watershed plan was presented to the North Caddo and South Caddo Districts in April 1959. The 14 sites in the North Caddo District are clear and construction is in progress. Eleven sites in the South Caddo District are to be constructed in fiscal year 1963. Of the remaining 18 sites scheduled for construction in 1964, all in the South Caddo District, 26 of the 40 needed easements have been signed. In addition to the above, easements are expected to be cleared and construction underway in 1963 on Washington Creek, Lower Wildhorse Creek, Roaring Creek, Kickapoo Sandy, Bear-Hybarger, and Finn Creek.

Outstanding energy and foresight have been displayed by members of the Wildhorse Creek Association. A committee canvassed the area to be benefited and asked for donations from the benefited landowners at the rate of \$5.00 per acre. They were highly successful in this fund raising campaign, and in addition to this, they interested the Duncan Chamber of Commerce and other civic organizations and civic-minded people to augment the raising of funds by their pledging more than \$35,000. The benefited landowners donated \$21,000, and the State earmarked \$34,000 of revolving funds. The total available money for easements was \$90,000. This money was used in the acquisition of hard-to-get easements, by condemnation or by private treaty. After the necessary land is acquired, they will dispose of the real property acquired and reuse the money for other easements downstream on Wildhorse. The Criner Creek and Roaring Creek Watershed Associations were also outstanding examples of the importance of local interest and participation in obtaining easements.

State agencies and Board of County Commissioners have participated in developing work plans and in the installation of land treatment and structural measures. The Oklahoma State Legislature provided \$445,000 in revolving funds for the purpose of providing land by condemnation proceedings and the subsequent disposal of such properties. This allows the reuse of the money time after time. Boards of County Commissioners have also cooperated in relocating roads, moving bridges, and otherwise adjusting the county road system to conform to the watershed work plans. Pipeline and power companies have been cooperative in instances where pipelines or power lines would be inundated by floodwater or permanent water. The City of Duncan voted a \$500,000 bond issue and purchased 3,000 acres of land necessary for the construction of large multipurpose structure which will store 30,000 acre feet in Wildhorse subwatershed.

Flood-producing rains occurred on treated watersheds in the upper half of the Washita during fiscal year 1962. No flooding occurred on any of the treated watersheds or on the Washita mainstem near the completed projects. Downstream, four untreated watersheds received damaging floods. Early in September 1961, Beaver Creek, an untreated watershed received rains which caused heavy flooding, damaging newly seeded alfalfa, wheat, and mature cotton.

Fishing, hunting, boating, and other forms of recreation increase each year in the project area as floodwater retarding and multipurpose structures are installed. The yearly income from permits on Wildhorse Site 22 alone for the last three years was \$15,465, \$17,490, and \$21,521. Man days fishing were 17,200 with a high of 650 for one day. One hundred and fifty lots have been leased with 125 cabins, homes, or house trailers occupying the lots. There are 100 private fishing barges on the lake.

The following is taken from an article in Oklahoma Wildlife, January 1962: "Already in the short span of the last decade upstream flood control projects have become well known in Oklahoma. These projects involve prevention of flood through use of small lakes on small watersheds. Waterfowl already have begun using watershed lakes in reasonably high numbers."

Good examples of benefits being derived from the upstream flood prevention program by the people who own bottomland on completed watersheds can be seen in Murray, Stephens, and Garvin Counties. Irrigation of approximately 500 acres of cropland in the Mill Creek Watershed has been completed and is in operation. Water is being drawn from replenished underground water sources for irrigation of these acres, in addition to water stored in the structural measures in the project. Commercial cattle feeding pens have been constructed adjacent to irrigated areas. There are numerous other successful examples of irrigation below completed structures, some involving land leveling and other measures. Areas covered with shrubs and perennial weeds on bottomland are being cleared and the land returned to improved grasses and legumes for the production of high forage crops to be utilized by livestock. One Stephens County rancher cleared 350 acres of bottomland at a cost of \$25,000 after being assured of flood prevention.

Yazoo River Watershed, Mississippi

Estimated total Federal cost	\$57,636,473
Total obligations through June 30, 1962	19,789,530

The authorized area of the Yazoo River Project includes 3,222,400 acres of which 227,975 are publicly owned. The principal problems are floodwater and sediment damages to agricultural lands. About 39 percent of the watershed is in woodland, 25 percent in cropland, 14 percent in pasture, and 22 percent miscellaneous uses, idle, and reservoirs. The entire watershed is covered by 16 soil conservation districts.

Of the total of 17,785 operating units in the watershed as of June 30, 1962, 12,889 were cooperating in their soil conservation district programs, and 9,865 of these had developed basic conservation plans on 1,696,660 acres. The major land treatment measures installed include 451,497 acres of conservation cropping systems; planting of 311,973 acres of critical lands to grasses, legumes, and trees; pasture planting on 261,214 acres; construction of 1,202 miles of diversions; stabilization of 2,280 miles of roadside with erosion control measures; and construction of 6,725 debris basins for control of sediment. Over the past five years an average of 30,000,000 trees have been planted each year within the Yazoo watershed.

As of June 30, 1962, a total of 96 floodwater retarding structures had been completed or were under contract. Other structural measures completed include 85 large stabilization and sediment control structures, 658 miles of stream channel improvement, including excavation, bank stabilization, jetties, clearing, and snagging.

Good progress was made in 1962 in securing easements. The outlook for securing all easements required for construction in 1963 is not as favorable as for 1962, although several local sponsors are moving ahead with court action to acquire the necessary easements. Indian Creek subwatershed in Panola County and Askalmore Creek in Tallahatchie County secured loans in the amount of \$170,000 from the Farmers Home Administration for easements required for construction in the fiscal year 1962 in these subwatersheds.

The installed land treatment and structural measures have been tested and their effectiveness proved. On February 18 and 19, 1961, a heavy rainstorm crossed the Yazoo River watershed. Over a five-county area the rainfall ranged from 8 to 10 inches. Forty-five floodwater retarding structures had been completed in this area prior to the storm, and there was no flooding immediately below any of these structures. Had these measures not been installed there would have been extensive damage. In the Bogue Creek subwatershed, comprising 161,000 acres, where 20 structures had been completed, there was also no flooding. This storm would have flooded over 10,000 acres and caused extensive damages before the dams were completed. The program has also been very effective in other subwatersheds where the work is installed.

Emergency Measures

Section 216 of the Flood Control Act of 1950 authorizes the emergency treatment of watersheds impaired by fire or other similar disasters to prevent loss of life or serious flood and sediment damage. Nine such watersheds involving 11,527 acres of newly burned forest and rangelands, were treated during fiscal year 1962 at a cost of approximately \$35,900. Local beneficiaries contributed about \$5,700 and the Federal Government financed the remaining \$30,168 from flood prevention funds for "emergency measures."

All of the areas treated were located in Southern California. Approximately 93,900 pounds of rapid growing mustard, rye grass, brome, and other grasses were sown by airplane or helicopter to provide an immediate protective cover over most of the burned acres.

Progress in Basic Data Collection

The Southern Forest Experiment Station of the Forest Service continued work on the collection, analysis, and interpretation of basic surface runoff data and erosion conditions as related to slope and forest cover conditions in the Little Tallahatchie and Yazoo River Flood Prevention Projects in Mississippi. The collection of basic data is done by Forest Service personnel assigned to these projects. Analysis and interpretation is being done by the experiment station as a contribution to the project programs. Information of this nature is urgently needed, and as results are obtained, they are being used by technicians to improve the design of land treatment and structural measures.

Facilities used to obtain basic data include stream gages, precipitation gages, and sediment sampling station in nine small watersheds. Three of these small natural drainage units are located in each of the following cover types: (1) abandoned, actively eroding, formerly cultivated lands which are reverting to forest cover; (2) depleted upland hardwood forest; and (3) loblolly pine planted over 20 years ago on abandoned cropland.

LOANS AND RELATED EXPENSE

Under Section 8 of Public Law 566, 83rd Congress, as amended, loans are made to local organizations to finance the local share of the cost of installing planned works of improvement in the 11 watersheds authorized by the Flood Control Act of December 22, 1944. The Farmers Home Administration is responsible for making these loans. The loans are made for acquisition of land, easements, and rights-of-way which the local organizations find they must purchase, and for the allocated local share of the cost of multi-purpose projects, including organizational expenses and legal costs. Five loans amounting to \$1,860,500 have been approved to local sponsoring organizations in the 11 authorized watersheds as of June 30, 1962. There are five other applications totaling \$480,000 on hand. Two of the approved loans and two of the pending applications include funds for incorporating municipal water storage in floodwater retarding structures. The other applications were all from drainage districts requesting funds for legal

fees, local shares of construction costs, and the acquisition of lands, easements, and rights-of-way. Following are representative examples of the loans approved in the authorized watersheds:

1. City of Keyser, West Virginia (New Creek White's Run, Subwatershed of the Potomac River Watershed): The City of Keyser sponsored a multi-purpose reservoir structure in this watershed which included 960 acre-feet of storage space for municipal water. A watershed loan of \$200,000 was made to the City to pay legal costs, acquire rights-of-way for the reservoir, and pay the city's share of construction costs of the reservoir which amounted to \$135,700. The loan is evidenced by revenue bonds maturing over a 40-year period.
2. Indian Creek Drainage District No. 1, Sledge, Mississippi (Indian Creek Subwatershed of Yazoo River Watershed): A loan of \$100,000 was made to this district to pay an estimated \$75,000 in costs for rights-of-way plus legal and administrative costs in connection with the construction of seven floodwater retarding and sediment storage structures to protect about 45,000 acres of land. The district will repay the loan from the proceeds of assessments over a 20-year period.

(d) Great Plains Conservation Program

Appropriation Act, 1963	\$12,250,000
Proposed supplemental, 1963, for increased pay costs	<u>109,000</u>
Base for 1964	12,359,000
Budget Estimate, 1964	<u>14,640,000</u>
Increase	<u><u>2,281,000</u></u>

Note: The Budget Estimate for 1964 reflects an increase of \$2,281,000 above the base for 1964. The following justifications are presented on a funds available basis, and the amount shown for 1963 includes a carryover of \$77,385 from prior years. On this basis, the projected obligations for 1964 represent an increase of \$2,203,615 above 1963.

SUMMARY OF INCREASES AND DECREASES, 1964
(On the basis of available funds)

Increase for cost-sharing assistance to farmers and ranchers in the Great Plains States for installing soil and water conservation practices	<u>1,672,615</u>
Increase for technical services and operating expenses	<u>435,000</u>
Reduction to reflect estimated savings due to the installation of a centralized data processing operation (MODE) for personnel and payroll data	-8,000
For pay act costs pursuant to Public Law 87-793	<u>104,000</u>
Net increase	<u><u>2,203,615</u></u>

PROJECT STATEMENT
(On the basis of available funds)

Project	1962	1963 (estimated)	Increases		1964 (estimated)
			Increased	Other	
			Pay Costs (P.L. 87-793)		
1. <u>Great Plains con-</u>					
<u>servation</u>					
<u>program:</u>					
a. Cost-					
sharing					
assist-					
ance	\$7,638,095	\$9,327,385	- -	/\$1,672,615(1)	\$11,000,000
b. Techni-					
cal serv-					
ices and					
operating					
expenses.	2,707,736	3,109,000	/\$104,000	/\$427,000(2)	3,640,000
Sub-					
total a/	10,345,831	12,436,385	/\$104,000	/\$2,099,615	14,640,000

(Continued on next page)

Project	1962	1963 :(estimated):	Increases		1964 :(estimated)
			Increased :	Other	
			Pay Costs : :(P.L.87-793):		
Unobligated balance brought forward	-256,969:	-77,385:	- -	\$77,385	- -
Unobligated balance carried forward	\$77,385:	- -	- -	- -	- -
Total increased pay costs (P.L. 87-793)	(- -)	(109,000):	(\$104,000)	(\$27,000)	(240,000)
Total available or estimate ...	10,166,247:	12,359,000:	104,000(3):	2,177,000	14,640,000
Transfer to "Operating expenses, Public Buildings Service, General Services Administration" ...	\$1,753:	- -			
Proposed supplemental for increased pay costs	- -	-109,000:			
Total appropriation or estimate ...	10,168,000:	12,250,000:			

a/ Represents obligations. Applied costs for 1962 are \$8,872,754. The difference of \$1,473,077 reflects, primarily, contracts for cost-sharing entered into for which the conservation practices will not be installed until subsequent fiscal years.

INCREASES AND DECREASES

(1) An increase of \$1,672,615 to provide cost-sharing assistance to additional farmers and ranchers in the Great Plains States.

The Department is authorized under Public Law 84-1021 to provide cost-sharing assistance to farmers and ranchers in the 10 Great Plains States. These funds enable cooperating landowners to carry out plans of conservation operation to protect and improve their land from erosion and deterioration. The large number of farmers requesting such assistance, and the inclusion of newly

designated counties in the program combine to create imposing demands for Great Plains cost-sharing in 1964. Cost-shares are limited to installing permanent nonrecurring practices and there are no acreage rental payments to farmers and ranchers in this program.

An average of about \$7.6 million per year has been obligated for cost-sharing assistance during the first five years of program operations. In August 1957 this program was operating in 221 designated counties. By December 31, 1962, a total of 375 counties had been designated for program assistance by the Secretary, leaving 47 counties which may be proposed for consideration for designation by the local people. It is estimated that about 10 of these will be designated prior to June 30, 1964. The increase of 70 percent in number of designated counties has resulted in a 28 percent reduction in the average amount of cost-sharing funds available per county.

The number of active unserviced applications increased from 2,927 on June 30, 1961, to 3,855 on June 30, 1962, an increase of 32 percent. Another 4,400 new applications are anticipated in 1963 and about 4,700 more in 1964. It is estimated that about 12,000 farmers and ranchers are ready to enter into contracts in the period immediately ahead.

Millions of acres of crop and rangeland in the Great Plains have been damaged during the past 30 years by erosion and soil blowing. This is the result of frequent severe droughts, high winds, and intense rainstorms. During each drought cycle the most critical areas within the total area suffer heavy soil losses from blowing. Drastic damage occurs to thousands of acres of good land when the poor soil material lost from these critical areas moves onto surrounding farms and ranches.

The Soil Conservation Service is making a determined effort to combat these problems by giving high priority to this program with its long-range cost-share contracts. These contracts assure producers the financial assistance which they must have to make the urgently needed land use conversions and adjustments. This is an important consideration and has strong appeal to young farmers endeavoring to establish stable operating units in a reasonable length of time and at nominal public and private costs. Over the long run this program provides a sound basis for the Government to reduce emergency types of Federal financial assistance in the area. It assures future production, so important in national emergencies, while reducing the present acreage of allotted crops. Improvement of the wildlife habitat in designated Great Plains counties is one of its important side benefits.

Federal cost-share assistance has averaged about 67 percent of the total costs required to establish contracted cost-share conservation practices. Farmers and ranchers pay for the remaining costs of practice installation, maintain the works of improvement, and install all annual recurring practices at their own expense. The program is an answer to the problem of underemployment on many farms and ranches through the development of economic operating units that more fully utilize the farmers' or ranchers' time and conserve the soil and water resources. Recipients of program benefits include the cooperators themselves, their neighbors whose land is being jeopardized, the local trade centers and businesses, and the general public.

Under this program, the farmer or rancher selects land which soil surveys indicate is substandard for cultivation and depleted rangeland which needs

reseeding and schedules it for planting to grass. The proposed increase in funds for 1964 would be a step toward attaining program objectives on a maximum number of acres.

The \$1,672,615 would increase by about 490 the number of long-term (3 to 10 years) cost-sharing contracts which could be entered into in fiscal year 1964 making an estimated total of 3,230 for the year. In entering into contracts priority would be given to those critical areas having:

- (a) Major problems of converting cropland unsuited to cultivation to permanent vegetation.
- (b) Major wind and water erosion and moisture conservation problems on rangeland, or on cropland suitable for continuous cropping.
- (c) Wind erosion problems requiring simultaneous action and where owners and operators agree to act in unison.

(2) A net increase of \$427,000 for technical services and operating expenses as follows:

- (a) An increase of \$435,000 for technical services and operating expenses.

Under the Great Plains Conservation Program the Service furnishes technical assistance to farmers and ranchers in adjusting their land use and applying needed conservation treatment to protect their land from further deterioration. The farm and ranch conservation plans that are developed by district cooperators through Service assistance under the regular Conservation Operations program are used as the basis for developing long-term cost-sharing contracts. Great Plains funds are used to develop similar plans for applicants who are not Soil Conservation District cooperators. In both cases, technical assistance is provided as scheduled during the contract period to insure sound application of the planned conservation practices. Repeat installation of practices is also necessary where failures occur for reasons which are beyond the farmer's control.

The Service has responsibility for providing technical services at the time the cooperator enters the contract. The number of Great Plains contracts being applied increased from 575 at the end of the 1958 fiscal year to 8,729 at the end of fiscal year 1962. Obligations required for technical assistance increase as the number of contracts in an active status during a fiscal year increase because conservation practices are installed on most of the active contracts each fiscal year.

The regular SCS staff serving soil conservation districts normally spend only part of their time doing Great Plains work and therefore relatively few personnel are used full-time on the program, the balance of their time is needed and utilized on other programs. This eliminates the necessity for having full-time technicians in locations with insufficient workload and utilizes funds with maximum efficiency.

All funds expended for technical services and operating expenses on this program are for the sole purpose of implementing the cost-share contracts discussed under item (1) above for this appropriation. This increase in funds is needed in the 1964 fiscal year to furnish field technical time required to prepare the estimated 490 added new contracts and install first year practices scheduled thereon; install scheduled practices in connection

with approximately 1,450 additional active contracts entered into in previous fiscal years; and provide technical assistance in newly designated counties. Professional employees and aides would be added to existing work unit staffs serving designated counties on the basis of current workload.

(b) A reduction of \$8,000 to reflect estimated savings due to the installation of a centralized data processing operation (MODE) for payroll and personnel data. An explanation of this reduction is included in the preface to these Explanatory Notes. This reduction is all applicable to the "technical services and operating expenses" activity.

(3) An increase of \$104,000 for pay act costs pursuant to Public Law 87-793. (An over-all explanation of increases for pay act costs is included in the preface to these Explanatory Notes in Volume 1.)

STATUS OF PROGRAM

Current Activities: The Great Plains Conservation Program authorized under Public Law 1021, 84th Congress, (16 U.S.C. 590p) provides producers in the critically erodible areas of the Great Plains, by contract, assured cost-sharing and technical assistance needed to bring about the protection, wise use, and improvement of their soil, water, plant, and wildlife resources, and thus help stabilize the economy in this important agricultural area. The program supplements existing Departmental conservation programs and activities in those counties in the ten Great Plains States that are designated by the Secretary as susceptible to serious wind erosion. The assistance furnished to producers under this item consists of the following:

1. The technical services of professional soil conservationists and other technical specialists who help farmers and ranchers carry out their basic conservation plans under contract. These technicians develop suitable schedules for applying conservation treatment measures; prepare contract documents, modify contracts to reflect changes in average costs or schedules, etc; spotcheck for compliance and certification of performance; do follow-up work on the contracts; and help producers, who are not soil conservation district cooperators, develop acceptable plans of operation for their individual farm or ranch unit. (Farm and ranch conservation plans for district cooperators are prepared under the Conservation Operations program.) The schedules for carrying out basic conservation plans provide for orderly adjustment to proper land use and specify the management and conservation treatment needed to protect the land from the hazards of wind and water erosion, prevent soil and plant deterioration, moisture depletion, and improve the productive capacity of the land.
2. Technical assistance of soil conservationists, engineers, or other agricultural specialists and aids who help producers install planned conservation treatment measures as scheduled in the contract with the Service. The farmer or rancher is responsible for carrying out his plan of operation. He uses all sources of assistance available under local, State, and Federal conservation programs to help him achieve desired soil and water conservation objectives.
3. Cost-sharing assistance to producers for the installation of conservation treatment measures under long-term (3 to 10 year) contracts which include both the conservation plan of operation for the farmer or rancher's unit and a time schedule of the planned changes in cropping systems and land use and the conservation measures which are to be carried out on the farm or ranch during the contract period. Cost-shares are specifically limited to installing permanent nonrecurring practices and are obligated at the time the plan is developed and the contract signed. This guarantees the availability of funds to apply the needed practices on schedule and to make the changes in land use that are required to cope with the soil and climatic hazards of the Great Plains area.

Program Assignments

Administrative responsibility for carrying out the Great Plains Conservation Program has been assigned to the Soil Conservation Service. A continuing inter-agency Departmental committee has been designated by the Secretary to recommend program policies, procedures, and regulations and to assure coordination of all Departmental resources in the Program. This Committee consists of representatives of the Soil Conservation Service (as Chairman), Agricultural Stabilization and Conservation Service, Agricultural Marketing Service, Agricultural Research Service, Economic Research Service, Farmers Home Administration, Federal Crop Insurance Corporation, Federal Extension Service, Forest Service, and Office of Information. State and County Program Committees have been established also to help coordinate the program in the respective Great Plains States and counties and adapt it to specific needs of the States and counties within the limits of established policies and program regulations.

Practices Cost-Shared and Limitations

Program regulations, including the practices eligible for cost-shares, have been published for program control and guidance. The list of practices includes establishment of permanent vegetative cover, field or contour stripcropping, contour cultivation, improvement of range cover, trees or shrubs for windbreaks or shelterbelts, establishment of waterways, construction of terrace systems, chiseling or pitting of rangeland, construction of dams, improvement of irrigation works primarily for the production of livestock feeds, constructing fences, controlling brush, and construction of wells and installing pipe lines for livestock water. The maximum cost-share rate offered in any contract cannot exceed 80% of the approved county average estimated cost of installing each eligible practice. Cost-shares for constructing or developing pits or ponds for irrigation water are limited by administrative regulation to \$2,500 per structure. The total amount that may be cost-shared for all irrigation practices is limited to \$2,500 for any one contract or to approximately one-fourth of the Federal obligation, whichever is the larger. Furthermore, a cost-share ceiling of any individual contract has been set at \$25,000.

Selected Examples of Recent Progress:

Agency Participation

Following is the estimated distribution of the Great Plains Conservation Program funds by agency:

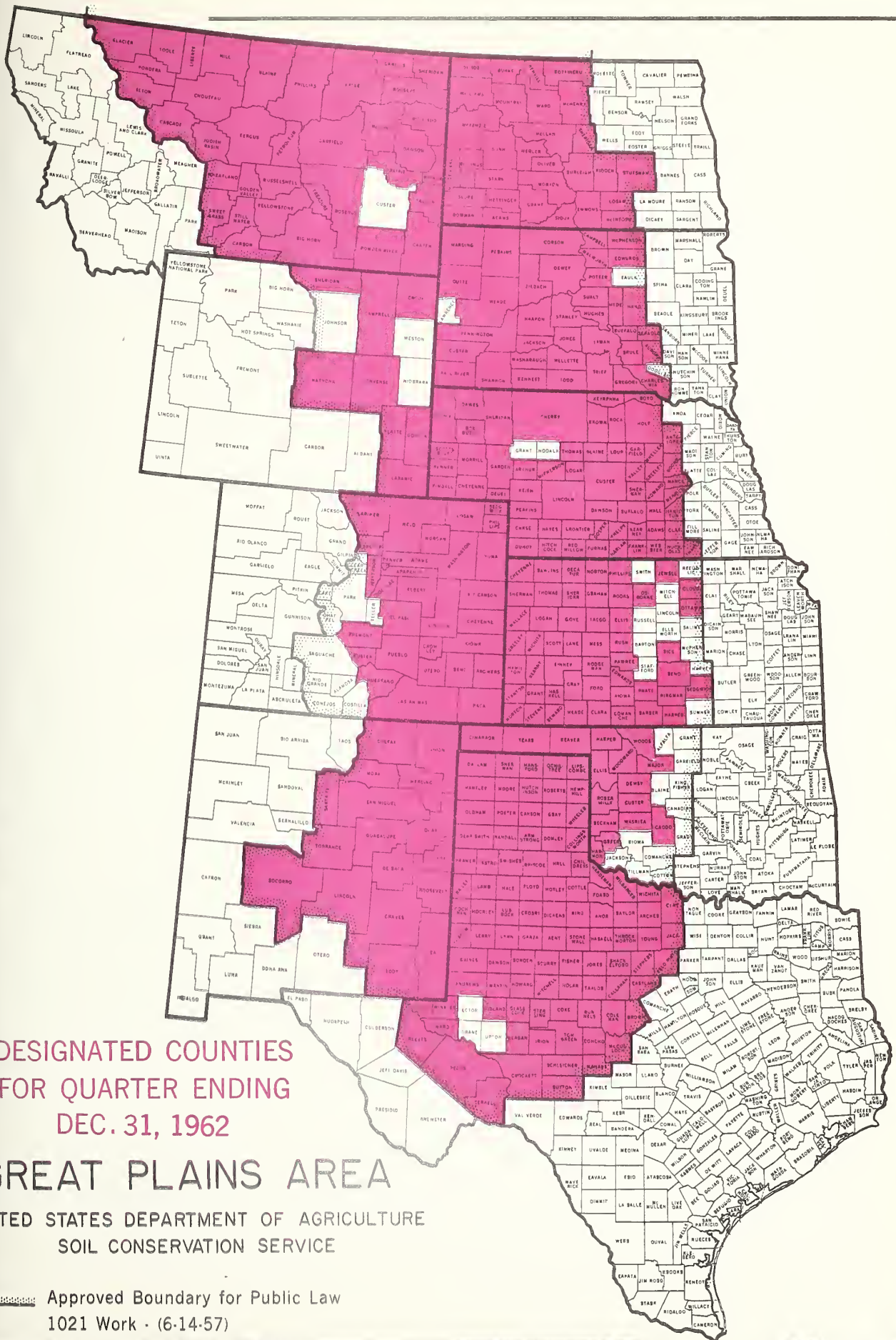
Item and Agency	1962 Obligations	1963 Estimate	1964 Estimate
Cost-Share Payments -			
Soil Conservation Service	\$7,638,095	\$9,327,385	\$11,000,000
Technical Services and			
Operating Expense:			
Soil Conservation Service ..	2,617,921	3,013,017	3,539,272
Agricultural Stabiliza-			
tion and Conservation			
Service	60,763	65,113	68,863
Forest Service	16,746	17,470	18,050
Office of Information	12,306	13,400	13,815
Subtotal	2,707,736	3,109,000	3,640,000
Total	10,345,831	12,436,385	14,640,000

Counties Designated for Program Participation

The Secretary had designated 375 eligible counties in the 10 Great Plains States to participate in the program as of September 30, 1962. Determination of eligibility is based on various physical factors and the interest of local people. The criteria used in the consideration of physical factors include: the susceptibility of the land to serious wind erosion by reason of soil type, terrain, and climatic conditions; and the need for changes in land use, cropping systems, and grassland management. The responsibility for developing procedures to determine local interest in the program is the duty of the State Program Committee. The procedures may include public hearings, petitions of land owners and operators, and resolutions by groups interested in the agriculture and conservation of resources in the county. The number of designated counties in each of these States is as follows:

Colorado	29	North Dakota	30
Kansas	50	Oklahoma	16
Montana	36	South Dakota	36
Nebraska	58	Texas	95
New Mexico	17	Wyoming	8

A map delineating the 375 designated counties follows:



Land Damaged by Wind Erosion

Local estimates made in 248 counties indicate that about 1.4 million acres were damaged by wind action in the Great Plains during the blow season from November 1, 1961 to May 31, 1962. This was 38% less than the 2.3 million acres reported in 269 counties for the 1960-61 blow season and about 40% less than the 2.4 million acres for the 1959-60 season. These estimates were based on observations of field conditions. Field technicians use their current knowledge of the situation which is gained from daily operations and activities without the benefit of special surveys or studies. The reported damages include soil removal and deposition by wind that subject the land to further erosion hazards, materially lower yields, or impair the inherent productive capacity of the land. The land damaged includes 1,148,000 acres of cropland, 233,000 acres of rangeland, and 49,000 acres of other land. The Northern Plains States reported 734,000 acres and the Southern Plains States 696,000 acres damaged. The acreage of land damaged this season is shown in the following table:

States	Acres of Land Damaged (As of May 31, 1962)				
	Counties Reporting (Number)	Cropland (Acres)	Rangeland (Acres)	Other Land (Acres)	Total Land (Acres)
<u>Southern Great Plains</u>					
Colorado	6	36,000	-	-	36,000
Kansas	63	66,000	3,000	1,000	70,000
New Mexico	10	95,000	1,000	-	96,000
Oklahoma	15	20,000	2,000	-	22,000
Texas	68	428,000	15,000	29,000	472,000
Subtotal	162	645,000	21,000	30,000	696,000
<u>Northern Great Plains</u>					
Montana	31	163,000	13,000	1,000	177,000
Nebraska	16	116,000	21,000	3,000	140,000
North Dakota	20	135,000	5,000	-	140,000
South Dakota	14	38,000	68,000	-	106,000
Wyoming	5	51,000	105,000	15,000	171,000
Subtotal	86	503,000	212,000	19,000	734,000
Grand Total	248	1,148,000	233,000	49,000	1,430,000

Resume of Damages and Land Conditions
for the 1961-62 Season

Southern Great Plains - Total land damages of 696,000 acres for the 1961-62 season are comparable to the 691,000 acres reported a year earlier. Seventy percent (70%) of the damages were reported for the period of March through May with very little land damage reported for the November-December period. Colorado and Kansas reported less land damage while New Mexico, Oklahoma, and Texas each reported increases. The greatest acreage of damages was reported by Texas where conditions remained generally dry with a considerable acreage in condition to blow.

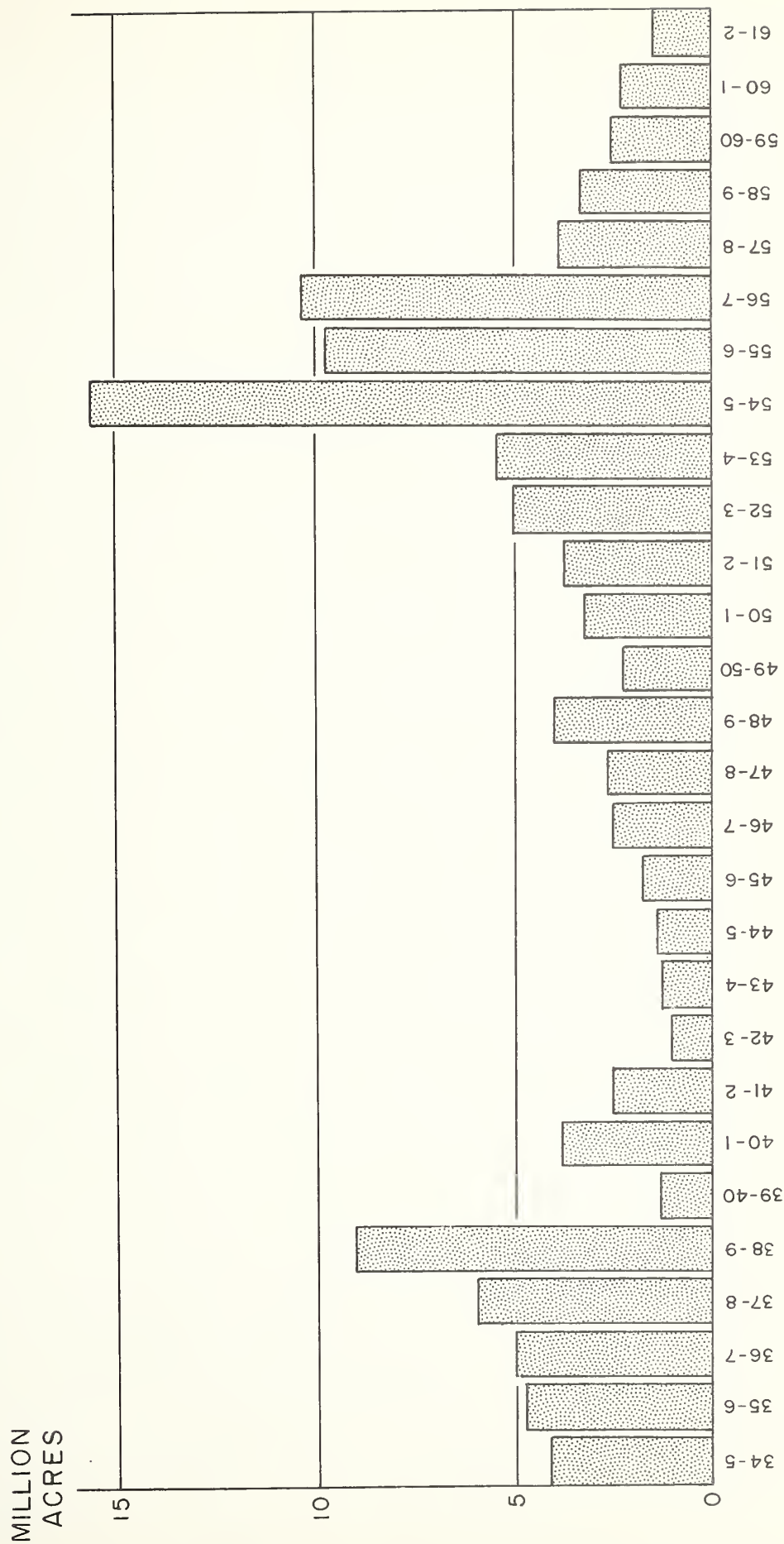
Northern Great Plains - A total of 734,000 acres of land damage was reported for the current season compared to 1,633,000 acres the previous year. All States in the Northern Plains reported less land damage than a year earlier. Adequate snow cover and below normal temperatures during the winter months reduced the amount of land damage otherwise expected. Low moisture conditions and light ground cover were characteristic of the Northern Great Plains States at the beginning of the winter. Above normal rainfall in May greatly reduced possible damages.

General Conditions in the Area

Precipitation in the Northern Plains States averaged 1.2 inches above normal for the period March through May. The Southern Plains States received only 50% of the average normal rainfall for this same period.

A chart showing the annual damage from wind erosion since the 1934-35 blow season follows:

ACRES OF LAND DAMAGED ANNUALLY IN GREAT PLAINS Seasons 1934-35 to 1961-62, inclusive



Note: Data for period 1943-44 through 1952-53 was obtained from reports of the Great Plains Council.
All other data was obtained from S C S reports. (The number of counties reporting may vary from year to year.)

Program Applications and Contracts

Interest in this voluntary program by farmers and ranchers has continued at a high level. Applications received during the fiscal year 1962 numbered 3,396 and 2,450 contracts were signed. Cumulative experience from inception of the program in late 1957 through June 30, 1962, for each of the 10 Great Plains States, and in total, is presented in the following tabulation:

Total Program Applications and Contracts as of June 30, 1962

State					Cost-Share			
					Obligations			
	Contracts		Active				Unserviced	
	Signed		Contracts		Total		Applications	
	No.	Acres	No.	Acres	Obligations	Avg. Per Acre	No.	Acres
Colorado.....	454	1,981,634	417	1,870,628	\$3,339,758	1.78	183	510,094
Kansas	847	938,231	823	912,412	2,656,970	2.91	349	331,265
Montana	474	2,124,967	458	2,079,700	2,626,759	1.26	333	2,114,969
Nebraska	1,375	1,786,052	1,294	1,727,742	4,448,106	2.57	746	901,013
New Mexico ...	381	4,445,844	316	3,863,139	3,289,120	0.85	75	677,667
North Dakota .	1,074	1,621,586	1,025	1,545,922	3,061,712	1.98	676	934,868
Oklahoma	608	1,267,029	591	1,237,256	2,609,451	2.11	220	427,560
South Dakota .	388	1,522,437	375	1,480,601	2,357,187	1.59	211	580,633
Texas	3,792	6,929,166	3,282	6,556,269	12,192,717	1.86	960	2,218,992
Wyoming	153	883,728	148	862,262	1,483,887	1.72	102	784,244
Total	9,546	23,500,674	8,729	22,135,931	38,065,667	1.72	3,855	9,481,305

Major Practices Established in 1962

The 1962 fiscal year was the fifth year of operations for the Great Plains Conservation Program. The installation of conservation practices has progressed satisfactorily. The number of farm and ranch units in the process of carrying out a scheduled program under contract increased from 575 the first year to 8,729 at the end of fiscal year 1962. As the number of contracts increase there is a corresponding increase in the technical workload associated with the practice installation on these contracts. Thus the amounts of conservation practices installed each year is expected to increase until the program stabilizes at a given level and contracts being completed equals the rate of contracts being signed. Twenty-four conservation practices are eligible for cost-sharing assistance under the program. The following tabulation includes data for the fiscal year 1962 on practice establishment and cost-shares paid for five practices of major significance in the Great Plains Conservation Program:

Major Practice Establishment

State	: Establishment of		:		:	
	: Permanent		: Reseeding Range,		:	
	: Vegetative Cover		: including fencing		: Terrace Construction	
	: (Practice GP-1)		: (Practice GP-5)		: (Practice GP-8)	
	: Cost-Shares		: Cost-Shares		: Lineal	
	: Acres : Paid ^a /		: Acres : Paid ^a /		: Feet : Paid	
Colorado	: 11,048:	\$53,877	: 3,204:	\$18,794	: 2,157,869:	\$60,954
Kansas	: 4,725:	35,875	: 6,304:	37,654	: 4,079,462:	105,374
Montana	: 12,293:	110,213	: 1,813:	18,039	: --	--
Nebraska	: 19,347:	183,902	: 4,978:	58,018	: 3,270,483:	130,917
New Mexico ...	: 853:	4,761	: 7,379:	23,470	: 85,853:	2,366
North Dakota .	: 34,307:	204,736	: 1,186:	8,019	: 42,029:	1,129
Oklahoma	: 3,504:	25,821	: 8,903:	42,398	: 1,730,754:	56,975
South Dakota .	: 6,208:	40,203	: 1,033:	6,591	: 554,411:	25,218
Texas	: 15,644:	123,723	: 28,974:	147,378	: 7,892,544:	205,025
Wyoming	: 2,242:	15,837	: 805:	5,707	: 35,698:	1,119
Total	: 110,171:	798,948	: 64,579:	366,068	: 19,849,103:	589,077

Major Practice Establishment - Continued

State	:Dams, Pits, or Ponds :		Controlling Com-					
	:for Livestock Water :		petitive Shrubs		: All Other :		Total	
	:as a Means to Pro-		to Protect		: Conserva-		: (All Con-	
	:tect Vegetative Cover:		Vegetative Cover		tion		: servation	
	: (Practice GP-21)		: (Practice GP-23)		: Measures		: measures)	
	:Cost-Shares :		:Cost-Shares :		:Cost-Shares :		:Cost-Shares :	
	:Number	: Paid ^{a/}	:Acres	: Paid ^{a/}	: Paid	: Paid	: Paid	: Paid
Colorado	87	\$40,799	7,329	\$30,039	\$279,035	\$483,498		
Kansas	75	56,418	1,300	1,950	180,974	418,245		
Montana	91	22,403	6,099	12,797	343,161	506,613		
Nebraska	113	59,476	2,540	4,568	276,102	712,983		
New Mexico ..	138	56,687	46,085	133,496	243,247	464,027		
North Dakota .	313	79,096	--	--	245,279	538,259		
Oklahoma	149	117,458	18,948	57,691	146,968	447,311		
South Dakota .	205	121,347	167	1,317	188,187	382,863		
Texas	271	121,631	330,406	720,753	768,390	2,086,900		
Wyoming	58	30,982	90	151	144,407	198,203		
Total	1,500	706,297	412,964	962,762	2,815,750	6,238,902		

a/ In addition to payment for complete treatment of the units reported, the amount shown includes payment to producers for completion of identifiable units that contribute towards completion of these practices, such as seedbed preparation or fencing.

Revegetation of Land Unsited to Cultivation

Most of the land now in cultivated crops in the Great Plains is suited to continuous production of cultivated crops provided needed conservation measures are applied and good management practices are continuously employed. There are, however, some 11 to 14 million acres of land in cultivation that are not suited to such use by reason of the soil type, topography of the land, and the normal low rainfall pattern as evidenced by the historically low and uncertain crop yields. Soil surveys have been accelerated in the Great Plains area and good progress is being made in helping farmers and ranchers to determine which of their farmland areas are unsited for cultivation and to make needed land use adjustments on these critically erodible areas by converting them to permanent vegetative cover. The farmer or rancher selects cropland which these surveys indicate is substandard for cultivation and then develops a schedule for planting it to grass under his Great Plains contract.

Cost-share contracts as of June 30, 1962, include 2,812,721 acres which were being used as cropland at the time the contracts were signed. The plans of operation developed and made a part of the contracts provided for the conversion of 688,197 of these acres, 24.5% to permanently vegetated rangeland or other noncropland use. The percentage of cropland conversions ranged from 13.3% in Kansas to 51.5% in New Mexico. During the fiscal year 1962 farmers and ranchers actually completed the establishment of 110,171 acres of

permanent vegetative cover and reseeded 64,579 acres of deteriorating range-land for which they received cost-sharing assistance under their Great Plains Conservation Program contracts.

Great Plains Conservation Program Impact Apparent over Broad Areas

On the average, farmers and ranchers pay about 33% and the Government 67% of the cost for cost-shared practices installed under the Great Plains Conservation Program. The farmer or rancher also pays the entire cost for all practices which are not cost-shared under any program, provides maintenance costs for both cost-shared and non-cost-shared practices, and foregoes use of the land while certain practices are being installed and/or becoming established. In addition farmers and ranchers receive no rental type payments from this program. The following examples illustrate the progress of the program, its impact on county-wide areas, and its effect on individual farms and ranches.

Beaver, Cimarron, and Texas Counties, Oklahoma: The economy of these Oklahoma Panhandle counties suffered acute setbacks from wind erosion, short crops, and decreased livestock production during the last two major droughts. Consequently, the conversion of erodible cropland to range, proper range use, and proper crop residue management (required practices under the Great Plains program) are of vital importance in this area. These practices are improving range conditions, increasing livestock production, conserving moisture, reducing wind erosion, and improving the productive capacity of the land in these counties. Proper range use was practiced on 454,636 acres of rangeland and proper crop residue management was established on 95,467 cropland acres in fiscal year 1962 under a total of 232 Great Plains contracts developed to date in these counties. These contracts contain 627,504 acres or twenty percent of the eligible agricultural land area. On these 232 operating units about 45,000 acres of cropland, almost 30% of the total before Great Plains contracts were entered, is planned for conversion to permanent native range. The contracts also call for overseeding an additional 29,000 acres of depleted rangeland. Improvements from practices installed under these contracts have created considerable interest among other land operators and they are also using the practices at a rapidly increasing rate. For example, the three counties reported a total of 326,792 acres of proper range use and 139,015 acres of proper crop residue management in 1956 whereas in 1962 the acreage reported was 697,258 and 338,869.

About 26,000 acres of land in these Great Plains contracts had previously been seeded to grass under the Conservation Reserve Program. Although the best use for most of it was permanent native grass production, farmers and ranchers were free to crop it again after the contract expired. However, in these counties Great Plains participants have agreed to retain 95% of their conservation reserve acres in permanent range. Based on past history and experience with acreage coming from the Conservation Reserve Program into the Great Plains Conservation Program, it is estimated that possibly 80% of the total Conservation Reserve acreage (238,971) in these three counties will remain as permanent rangeland. With continued favorable conditions, it is estimated that about 40% of the total area in these three Oklahoma Panhandle counties can be brought under the Great Plains Conservation Program within the next 4 to 5 years. Experience indicates that the program with its cost-sharing features has a stabilizing effect on the economy of the area.

Fremont County, Colorado: A partner and manager of a ranch in the Fremont Soil Conservation District, Colorado, recognized that the Great Plains Conservation Program offered the means to accelerate the installation of a complete soil and water conservation system that he had previously started as cooperator of the soil conservation district. Today he reports that the grass is improving; that he is selling as many pounds of beef as before, although he has reduced his breeding herd by one-third; that he no longer has to buy winter feed; that production costs are reduced; and, for the first time in his experience, there was grass left on the winter range at the season's end. Average weight of spring calves, when marketed in the fall, has increased from around 375 to 415 pounds, which the manager attributes mainly to better range. He says he can check his herd in about half the time it used to take due to better spacing of water developments. His herd is feeding more of the time, instead of traveling from one end of the range to the other for water.

Graham County, Kansas: The owners of a severely eroded 320 acre dryland farm near Hill City signed their Great Plains contract March 17, 1959. The unit contained 50 acres of native grass and 270 acres of cropland. About 140 acres of that under tillage was Class VI land unsuited for cultivation. They have seeded the 140 acres of Class VI cropland to permanent native grasses, constructed 5.5 miles of terraces, and established 2.6 acres of grassed waterway. The waterway healed a gully and removes excess water from terrace outlets without erosion. They also built one-half mile of diversion that will divert drainage into a stockwater pit to be constructed soon. A second stockwater pit is planned for another part of the farm. Stubble mulching protect fallow ground against wind and water erosion, all cultivated acres are farmed on the contour supported by terraces, and a legume will be included in the cropping system. Grazing will be controlled on the native grass seedings to maximize forage and beef production.

Nearly all conservation practices have been applied and the operator enjoyed a substantial increase in per acre wheat yields the past two years. He credits the terraces, diversion, and waterway (which diverted excess water away from an 18 acre lowland field) with saving his alfalfa stand as well as two crops of hay valued at \$1,600 this year. The grassed waterway also produced 600 bales of hay for a net income of \$200.

Keya Paha County, Nebraska: A Nebraska rancher has used the Great Plains Conservation Program to achieve proper range use on his 4,000 acre unit in the northwest corner of Keya Paha County. By installing stockwater wells to distribute grazing, cross fencing to separate range sites, and rotational grazing he has eliminated the problem of overgrazing and under use that existed on his rangeland prior to the contract. Judicious fencing allows the use of a meadow for summer grazing as well as proper use of subirrigated and wetland pastures. Grass species have improved remarkably and during the 1960 and 1961 drought the range carried 30 more animal units than before, whereas without rotational grazing a normal decline of about 40 animal units would have occurred. This increased forage output coupled with the maximum use of fall and winter grazing has reduced beef production costs by about \$10 per animal unit.

Since entering his Great Plains contract this producer has seeded 179 acres of native grass, installed three livestock wells, built 2,056 rods of cross fencing in pastures, planted 13 acres of trees for livestock windbreaks, built 108 rods of fencing to protect the trees, and shaped, seeded, and mulched all blowout areas. The selling weight of yearling calves has increased forty-five pounds per head over the past three years. The operator attributes this to rotation grazing and production testing which were both started at the same time. A total of \$3,183 has been cost-shared on the contract and the rancher has spent an additional \$2,000 to install and maintain contract items.

Roosevelt County, New Mexico: The producers on a Roosevelt County ranch in southeastern New Mexico have improved range conditions and doubled grazing capacity by Great Plains conservation practices. This family has seen the "Shinnery Sand" country change from a vigorous cover of tall and mid grasses to a shinnery-choked remnant of the climax species. In the early days, the shinnery was short and thin on the ground, but became bigger and thicker as the grass was killed out by droughts and overgrazing. By 1959 the shinnery, sage brush, snake weed, and yucca had drastically reduced the carrying capacity of their ranch. About 100 tons of hay was required annually for supplemental feed during the shinnery season and during snow storms. A few cows were lost from shinnery poisoning each spring, and snake weed gave more calving trouble every year. Thus with forage yields down, calfcrops smaller, and beef production decreasing, net income was in a decline.

Brush control is the practice presently in the spotlight on the shinnery oak rangeland of eastern New Mexico. By 1957 chemical brush control was showing good results, and by early 1959, it was an approved Great Plains practice. This rancher sprayed 960 acres under the cost-sharing features of the program and 1,600 additional acres at his own expense during 1959. Grazing was deferred on this land the following season. The first spraying gave a low percentage of root kill, but the top growth was killed back leaving all the moisture for grass production. Favorable moisture conditions coupled with deferred grazing resulted in vigorous growth and increased density from such grasses as sand bluestem, little bluestem, and side-oats grama, thereby providing added grazing and winter feed.

This rancher is convinced that a light spray treatment can be applied economically every two years even without cost-sharing benefits. The spray program pays because it enhances the benefits from other management practices and thereby reduces cattle loss, decreases supplemental hay feeding, and increases forage output. All his pastures have received some variation of the spray application. Two applications of a stronger formula were used on 2,000 acres under Great Plains cost-sharing. This resulted in an estimated 75 to 80% kill on shinnery oak. Other important conservation practices used on this ranch include: cross fencing in two pastures for better grazing distribution; construction of drinking troughs and a mile of pipeline for livestock water in two pastures; and proper grazing control to insure thrifty grasses that produce rapid growth.

(e) Resource Conservation and Development

Appropriation Act, 1963	- -
Budget Estimate, 1964	\$6,275,000
Increase	<u>+6,275,000</u>

SUMMARY OF INCREASES, 1964

For investigation and planning of projects	+565,000
For resource development through works of improvement and technical assistance in approved project areas	+2,210,000
For development loans and related expenses	+3,500,000
Increase	<u>+6,275,000</u>

PROJECT STATEMENT

Project	: 1962 :	1963	: Increase :	1964
	: 1962 :	:(estimated):		:(estimated)
1. Project investigations and planning	: - - :	- -	: +\$565,000(1):	\$565,000
2. Resource development and technical assistance	: - - :	- -	: +2,210,000(2):	2,210,000
3. Loans and related expense ...	: - - :	- -	: +3,500,000(3):	3,500,000
Subtotal	: - - :	- -	: +6,275,000 :	6,275,000
Total increased pay costs (P.L. 87-793)	: (- -):	(- -)	: (+75,000) :	(75,000)
Total available or estimate	: - - :	- -	: +6,275,000 :	6,275,000

General. The work to be undertaken under this appropriation will complement and accelerate the related regular programs of the agencies concerned, as provided in Section 102 of the Food and Agriculture Act of 1962 (Public Law 87-703). New authorities will provide for technical assistance in planning and carrying out, in combination with the regular going programs, of a balanced approach to land conservation and land utilization needs and will make available additional economic and employment opportunities to the people of the project areas.

Resource conservation and development projects typically will include two or more contiguous counties in the same land resource area, developed and carried out under local initiative and leadership, and organized to assure a balance in economic growth and stability through the development, conservation and best utilization of the natural resources of the area.

Going regular programs in conservation and development project areas and in soil conservation districts will be continued at the normal rate so that project activities will be in addition to, and not in lieu of, the going programs. For example, the work specified in a work plan for a conservation and development project may be like or similar to that in a watershed work plan, but the planned works of improvement would not be repeated or duplicated in the respective work plans. Likewise, the group enterprises, and conservation measures, already planned or installed on private land which contribute to this program would not be repeated in plans for this program. Appropriate land use adjustments, in accordance with the capabilities of the land, and economic need of the local people will be stressed wherever this work is done.

Estimated accomplishments in these projects in 1964 would include about 800,000 acres of additional soil surveys; 1,300 farm conservation plans involving conversions of cropland to grass and trees; 1,400 basic plans involving conversions of cropland to other uses, including recreation facilities; and about 2,500 landowners assisted in establishing one or more other needed land treatment practices.

Another 1,500 cooperators in project areas, who already have basic conservation plans, are expected to take advantage of the provisions of Section 101 of the Food and Agriculture Act of 1962 for conversion of croplands to other noncrop uses under the terms of long-term cost-share agreements.

INCREASES

(1) An increase of \$565,000 for investigation and planning of resource conservation and development projects.

In response to local needs and demands the Department will furnish technical assistance in designated areas to help plan local programs of resource conservation and development as authorized by the Food and Agriculture Act of 1962. These programs will be designated to bring about needed land use adjustments, protect, improve, and effectively utilize soil and water resources, and to stimulate economic growth. Such plans and programs will be developed in cooperation with local interests to fill their specific needs. The plans for project areas will be fully coordinated with local interests and going programs of all State and Federal agencies concerned. Work plans would be started in the 1964 fiscal year for about 10 to 15 project areas where the local needs for this program are most urgent. Land use, tenure, farm income, employment, and future opportunities for growth and development would be given appropriate consideration in determining those areas where resource conservation and development work would be most effective and of greatest assistance to rural community improvement.

Projects to be planned will be locally initiated and sponsored by local organizations. The success of each project will depend largely on coordinated planning and action by the local people, with the assistance provided by cooperating Federal, State and local agencies. Community groups and private individuals will have major responsibilities for the installation of planned works of improvement.

The Soil Conservation Service will provide technical leadership in this planning work. The work will be carried on in areas where there is a static or declining level of economic activity and need for resource conservation and development. The Soil Conservation Service planning staff will consist of the party leader, a conservation specialist, an engineer, two aides, and a secretary. The Forest Service will furnish specialized forestry assistance and advice as needed. The Economic Research Service will assign agricultural economists to work with each planning staff to help appraise economic conditions and project proposals. Planning funds would be allocated as follows:

Soil Conservation Service	\$400,000
Forest Service	100,000
Economic Research Service	65,000
Total	<u>565,000</u>

(2) An estimated \$2,210,000 for Federal contributions to works of improvement to be installed and for technical assistance in project areas, as follows:

(a) An increase of \$1,750,000 to assist in installing works of improvement and for related installation services in project areas.

Planned works of improvement within approved resource conservation and development projects may include water storage reservoirs, stream channel improvements, revegetation of seriously eroded areas, development of water supplies, improved drainage or irrigation systems, and other works needed locally to bring about needed adjustments in land use and to increase opportunities for economic growth.

The Soil Conservation Service will recommend those works of improvement which are feasible and arrange for construction as desired by local sponsors. Federal contributions to construction costs would be made where needed to help sponsors install those measures from which the public derives substantial benefits. This will be done under authority of the Act of April 27, 1935. Each project work plan will specify those structural improvements for which such assistance and technical installation services will be provided. In addition to construction costs included in this estimate, there would be available to the local people cost-sharing assistance under the ACP for approved practices and for rental payments to owners and operators for crop-land retirement. Utilization of both of those programs as may be needed will be encouraged on individual farms and ranches within such projects.

(b) An increase of \$460,000 for technical assistance to accelerate installation of planned land treatment measures that complement resource development improvements installed within project areas.

The work unit staffs in the resource conservation and development project areas would be augmented by about six man-years per project. The added staff would include a Project Coordinator who would work with sponsoring groups and local agencies to coordinate the work of all going programs which would contribute to the development of the project areas. The additional work unit personnel would help owners and operators install those practices and measures called for in the work plans, and accelerate other needed soil and water conservation work in the project area. Such assistance would be restricted to land owners and operators within approved project areas.

(3) An increase of \$3,500,000 to provide long-term loans for resource conservation and development improvements.

The loan phase of this program would be administered by the Farmers Home Administration. About \$3,300,000 of this estimate will be needed for loans to sponsoring organizations and groups within resource conservation and development projects. These funds will be used for loans to help install soil and water conservation works of improvement including recreational facilities, within approved project areas. Loans under this program will be made under contracts which will provide for the repayment thereof in not more than 30 years, with interest at the average rate as determined by the Secretary of the Treasury. The other \$200,000 would be used for administration and related expense.

* * * * *

Further information on this program is included in the following "Explanatory Statement."

EXPLANATORY STATEMENT

Administrative leadership within the Department for development of Resource Conservation and Development Projects has been assigned to the Soil Conservation Service. The new conservation tools provided in Public Law 87-703 are extremely important to the success of such projects. These new authorizations will be used in combination with other fully tested conservation programs to achieve the basic project objectives. Some of the primary goals of such projects are as follows:

- (1) Accelerated adjustments in land use and ownership to improve the economic stability of family farms;
- (2) Shift the use of land from the production of crops now in over abundance to suitable uses for which there are unmet demands such as recreation, wildlife, rural industry, roads and water supply;
- (3) Speed-up the planning and application of sound soil, water, and plant conservation treatments to protect and improve these resources for future demands;
- (4) Provide additional employment in rural areas and thereby reduce undesirable migration to population centers that already face unemployment problems; and
- (5) To start interrelated actions in rural America that will enhance the economy of the Nation.

Resource conservation and development projects will be locally initiated and sponsored. The success of each project in reaching its objectives will depend on coordinated planning, action by the local sponsors, and the effectiveness of the assistance provided by cooperating Federal, State and local agencies.

Although the Soil Conservation Service is responsible for administering the work of this program, it is carried on cooperatively with other Federal agencies and departments, State and local agencies, and sponsoring organizations. Other agencies of the Department of Agriculture will share in the work of these projects in accordance with their regularly assigned functions. Such coordinated assistance among the agencies primarily concerned can bring about teamwork necessary for project action.

Governing bodies of soil conservation districts, in cooperation with other interested committees or groups, are expected to provide local project sponsorship. These projects will usually be in areas where acceleration of conservation activities are required to provide additional economic opportunities to the residents of a single district, or parts of several adjoining districts, or other geographic planning units within a land resource area.

The work plan for each project will be developed by the project sponsors, with technical assistance of the Soil Conservation Service, and help from other cooperating Federal, State and local agencies. Each plan will reflect various interests based on needs and objectives of the local people as expressed by

local sponsoring groups. Such plans will set forth the specific opportunities for economic growth and expected results from the development, conservation, and utilization of the natural resources in the project area.

In addition to the project-type of activities, such as reservoirs, stream channel improvement, access roads, trails, roadside parks, rural housing for senior citizens, and many other publicly sponsored developments, this program will also include necessary assistance to individual land owners and operators within such projects. This means that farmers, ranchers, and other operators of private lands in the projects will have readily available:

- a. Technical assistance to help plan, design, and layout needed practices on their land;
- b. Local credit to help landowners finance capital improvements;
- c. Priority cost-sharing on certain approved practices;
- d. Federal contribution toward cost of installing planned works of improvement;
- e. Loans for soil and water conservation measures, including recreational facilities.

The primary objective of operations in such projects will be the orderly development, improvement, conservation, and utilization of natural resources of each project area, and to provide new employment opportunities and other economic opportunities to local people.

Sponsoring groups and agencies can now use several authorities for coordinated planning and action. This planning may include acceleration or re-direction of going programs and changes in land use to promote economic stability. It may include use of loans or contributions where needed and cost-sharing to move ahead with planned work. It may include new or increased community water supply and recreational enterprises, when operated and controlled by local agencies. It may include income-producing facilities on private lands, especially where there is a need to quickly convert cropland to other uses.

Local programs and work plans in approved projects will include many combinations and variations in treatments designed specifically to stimulate local participation and action. Technical help and financial assistance as specified in approved work plans will be effectively used in solving physical and economic problems. The Food and Agriculture Act of 1962 along with other basic Department legislation, provides a sound basis for such projects in the period immediately ahead.

Staff Operations

The Soil Conservation Service will assist sponsoring groups in appraising local interests and needs, recommend scope of the work, and area of proposed projects, and perform related duties. It will also help to revise or adjust existing local programs to include special features and provisions of the Food and Agriculture Act of 1962. Information agencies will be

encouraged to explain the benefits, opportunities, and advantages of coordinated action. Their releases through the press and otherwise, meeting with local groups, and discussions with prospective sponsors, will indicate the kind of work which communities and participating individuals can do for themselves with the technical help and financial assistance available to them.

It is contemplated that planning staffs will be assigned to five selected work areas. These staffs would be centrally located to help develop work plans. A planning staff would usually consist of the party leader, a conservation specialist, an economist (Economic Research Service), an engineer, a forester (Forest Service), two aides, a credit specialist (Farmers Home Administration), and a secretary.

After the work plan for each project is approved by the Governor and by the Secretary of Agriculture, a project coordinator will be assigned to assist the sponsors in carrying out the provisions of each approved work plan. Work unit staffs in the projects will be increased to meet the added work load. This will include preparation of development contracts; processing of loans and Federal contributions; design, layout and installation of planned works of improvements; and any related soil and water conservation work on private lands within the project area. Such staffing will vary with the size and scope of work to be undertaken.

Loan funds will be administered by the Farmers Home Administration and would be available to local sponsoring agencies and groups for project type activities. After the first year of operations, the future needs for such loans can be determined on the basis of work plans and programs then in process. About ten to fifteen work plans are expected to be in various stages of planning in 1964.

The soil survey and related interpretations will be extremely useful in program development and project operations. In most areas it will be necessary to intensify the rate of mapping to get full coverage as quickly as possible. Much of the work already included in farm and ranch conservation plans will contribute to the program, but some revisions, especially for land use adjustments, will be necessary to take full advantage of these new resource management opportunities. The planning and application of additional land treatment practices on farms and ranches will continue to be a major part of soil and water conservation district activities within projects.

National Goal on Land Use Conversions

There is an urgent need to convert vast acreage of presently cultivated cropland in the United States to other non-crop uses. Projected estimates indicate that needs for cultivated crops can be met on about 50 million acres less than is presently used. Land use adjustments needed during the next 20 years are estimated as follows:

Cropland to urban	6 million acres		
" to public facilities	1	"	"
" to recreation, open spaces, etc.	5	"	"
" to pasture and hay	37	"	"
" to forest and tree crops	19	"	"
Total	68	"	"

Other adjustments in land use would bring some 17 million acres of better grade farm land into crop production during the same period. The critical part of this projected long-range program is the first five years when 35.2 million acres can and should be converted from cropland to other profitable uses--at the rate of 7 to 8 million acres a year.

Nearly 2 million individual farmers and ranchers who have developed about 1,500,000 basic conservation plans will be cooperating in the soil conservation district programs, by the end of 1964. Many of these experienced conservation farmers will convert cultivated cropland to other desirable and profitable uses at the rate of about 2.5 million acres a year. Some of them will need soil and water conservation loans to help finance such conversions. The Soil Conservation Service will continue to assist these cooperating farmers and ranchers with needed adjustments in land use in accordance with their long-term plans in all districts. Particular emphasis will be given to cropland conversions and other land use adjustments in project areas.

Consideration also will be given to helping local leaders with rural zoning around or near large population centers. Many part-time farmers and part-time city workers need consultative help in making the best use of the natural resources which they control. Other low-income people in cities, and some unemployed factory workers are finding much satisfaction in country living. Such a movement would release many persons from the relief tolls now mounting in some of our crowded cities.

The resource conservation and development program in approved areas will include physical land treatments, adjustments in land use, needed public works, conservation of soil and water, development and improvement of natural resources as a means of bringing about long-term economic betterment. This work in approved projects will contribute to the national goals as stated above and to the economic welfare of local people.

(f) Water Conservation and Utilization Projects

PROJECT STATEMENT
(On the basis of available funds)

Project	1962	1963 :(estimated)	1964 :(estimated)
Development of land for irrigation	\$2,000:	\$2,000:	- -
Unobligated balance brought forward	-129,000:	-127,000:	-\$125,000
Unobligated balance carried forward	+127,000:	+125,000:	+\$125,000
Total appropriation or estimate	- - :	- - :	- -

Land development for irrigation on the Eden Valley Project in Wyoming has been completed in accordance with the project plan prepared cooperatively with the Bureau of Reclamation. Sales of farms developed under the program have been completed. One of the farms has been transferred to the State of Wyoming as a demonstration farm. The sale of three tracts of land was deferred because of irrigation water shortage. These tracts are all of the remaining land surplus to the needs of the project and are expected to be transferred to the Department of Interior. The Eden Valley Soil Conservation District has been staffed to furnish technical assistance in soil and water conservation to the project settlers. Sufficient funds are available from prior-year appropriations to protect the investment of the Government in the remaining tracts and no new appropriation will be required.

STATEMENT OF OBLIGATIONS UNDER ALLOTMENTS AND OTHER FUNDS

(Includes only those amounts, which by November 30, 1962, were actually received or programmed for 1963 or 1964. Since work for other agencies is performed on a service basis, at the request of those agencies and for their benefit, it is not practicable to estimate in advance the amounts to be received in some cases.)

Item	: Obligations, : 1962	: Estimated : Obligations, : 1963	: Estimated : Obligations, : 1964
Allocations and Working Funds	:	:	:
(Advances from other agencies):	:	:	:
Agency for International	:	:	:
Development:	:	:	:
For training and technical	:	:	:
assistance activity	\$63,082	\$93,000	\$96,000
For special projects	10,770	72,000	73,000
Office of Emergency Planning - For	:	:	:
radiological defense training ...	13,500	- -	- -
Consolidated Working Fund, General,	:	:	:
Agriculture - For technical	:	:	:
assistance under the Area	:	:	:
Redevelopment Program	23,473	84,500	130,000
Public Works Acceleration, Depart-	:	:	:
ment of Commerce - For Accelera-	:	:	:
tion of public works on P.L. 566	:	:	:
watershed projects	- -	2,000,000	- -
Total, Advances from Other Agencies	110,825	2,249,500	299,000
Trust Funds:	:	:	:
Miscellaneous Contributed Funds,	:	:	:
Department of Agriculture:	:	:	:
For cooperation with Soil Conser-	:	:	:
vation Commission, California, in:	:	:	:
developing cultural methods and	:	:	:
experimental seed supplies at	:	:	:
Pleasanton Nursery	33,230	32,230	33,000
For cooperation with State and	:	:	:
local organizations in the survey:	:	:	:
of watershed projects and the in-	:	:	:
stallation of watershed works of	:	:	:
improvement	474,247	394,770	522,000
Total, Miscellaneous Contributed	:	:	:
Funds	507,477	427,000	555,000

(Continued on next page)

Item	: Obligations, : 1962	: Estimated : Obligations, : 1963	: Estimated : Obligations, : 1964
Obligations under Reimbursements	:	:	:
from Governmental and Other Sources:	:	:	:
Conservation operations:	:	:	:
For sale of cartographic repro-	:	:	:
ductions, cooperative projects	:	:	:
with State agencies, detail of	:	:	:
personnel to other Federal	:	:	:
agencies, sale of equipment and	:	:	:
accessories for which the pro-	:	:	:
ceeds are used to purchase	:	:	:
similar items, etc.	: 1,916,588	: 1,929,255	: 1,940,000
For technical and other assistance:	:	:	:
to farmers and ranchers in	:	:	:
participating counties pursuant	:	:	:
to agreements with individual	:	:	:
Agricultural Stabilization and	:	:	:
Conservation State and County	:	:	:
Committees	: 8,232,617	: 8,000,000	: 8,000,000
Watershed protection	: 771,216	: 923,964	: 820,000
Flood prevention	: 190,787	: 56,081	: 100,000
Great Plains conservation program	: 8,414	: 5,700	: 10,000
Total, Reimbursable Obligations	: 11,119,622	: 10,915,000	: 10,870,000
TOTAL, OBLIGATIONS UNDER ALLOTMENTS	:	:	:
AND OTHER FUNDS	: 11,737,924	: 13,591,500	: 11,724,000

PASSENGER MOTOR VEHICLES

The 1964 estimates propose the purchase of 10 additional and 193 replacement passenger motor vehicles.

The passenger motor vehicles of the Soil Conservation Service are distributed among the 51 State and Territorial offices, approximately 300 area offices and various technical specialists located at field headquarters. None of these vehicles are used in Washington, D. C. The vehicles are used in rural or other areas where common carrier facilities are either non-existent, uneconomical, or inadequate due to the nature of the travel which requires a high degree of mobility, i.e., frequent stops often at places inaccessible by common carrier. Also, two or more persons often are required to travel together, sometimes for long distances, making the use of a pickup or truck type vehicle impractical for such trips. Resident technicians servicing farmers and ranchers in soil conservation districts do not use passenger vehicles but travel in pickup trucks to field areas to conduct surveys and prepare conservation plans, perform engineering work or to lay out conservation practices.

Passenger motor vehicles are not assigned to one individual exclusively at locations where more than one employee has need for them. This allows several employees to use a single car and minimizes the number of vehicles and maintenance costs.

Additional passenger motor vehicles: The 1964 estimates provide for the purchase of 10 passenger motor vehicles for the new program, Resource Conservation and Development. These vehicles will be used primarily by Project Coordinators and project staff members engaged in carrying out planned resource and conservation development work in coordination with going programs of work in approved project areas. The nature of this work will require frequent travel for considerable distances in rural areas not served by common carrier facilities. Two or more employees will often travel together.

Replacement of passenger motor vehicles: The estimates for 1964 provide for the scheduled replacement of 193 passenger motor vehicles during the fiscal year. Most of the vehicles proposed to be replaced will be well within the standards of 60,000 miles or 6 years of age established by the General Services Administration.

Efforts by the Service to carry out a sound replacement schedule have been effective. The Service will replace about 180 vehicles during the fiscal year 1963, and the 193 replacements estimated for 1964 will enable replacement of all passenger vehicles in the Service over 7 years of age or 70,000 miles. Actual replacements, however, will be based on economy of operation and expected use factors, as well as the age and mileage.

The following table indicates the use and number of passenger motor vehicles proposed for purchase and replacement during 1964 fiscal year:

Activity and Use			Vehicles
			Scheduled
			for
	Purchases	Additional	Replacement
Conservation Operations-For use by Area Conservationists, technical specialists, survey supervisors, and State Office personnel	0		158
Watershed Protection-For use by Assistant State Conservationists for Watersheds, Watershed Party Leaders, and technical specialists making investigations and surveys of proposed small watershed projects; doing planning and supervising installation of works of improvement in authorized projects; and negotiating with local sponsors	0		20
Flood Prevention-For use by technicians and aids in planning and installing works of improvement in eleven authorized projects	0		13
Great Plains-For use by Assistant State Conservationists in supervising and inspecting activities under the Great Plains Conservation Program	0		2
Resource Conservation and Development-For use by Project Coordinators and project staff members engaged in carrying out planned resource conservation development work in coordination with going programs in approved project areas	10		0
Total	10		193

The Soil Conservation Service had 880 passenger motor vehicles on June 30, 1962. Age and mileage data for these vehicles is listed as follows:

Year Model	Age Data		Lifetime Mileage (Thousands)	Mileage Data	
	Number of Vehicles	Percent of Total		Number of Vehicles	Percent of Total
Prior Years	2	0.2			
1953	1	0.1	Over 100	3	0.3
1954	0	0.0	80-100	32	3.6
1955	3	0.3	60-80	197	22.4
1956	29	3.3	50-60	112	12.7
1957	130	14.9	40-50	106	12.1
1958	241	27.4	30-40	100	11.4
1959	87	9.9	20-30	104	11.8
1960	113	12.8	10-20	81	9.2
1961	133	15.1	1-10	133	15.1
1962	141	16.0	Under 1	12	1.4
Totals	880	100.0		880	100.0

